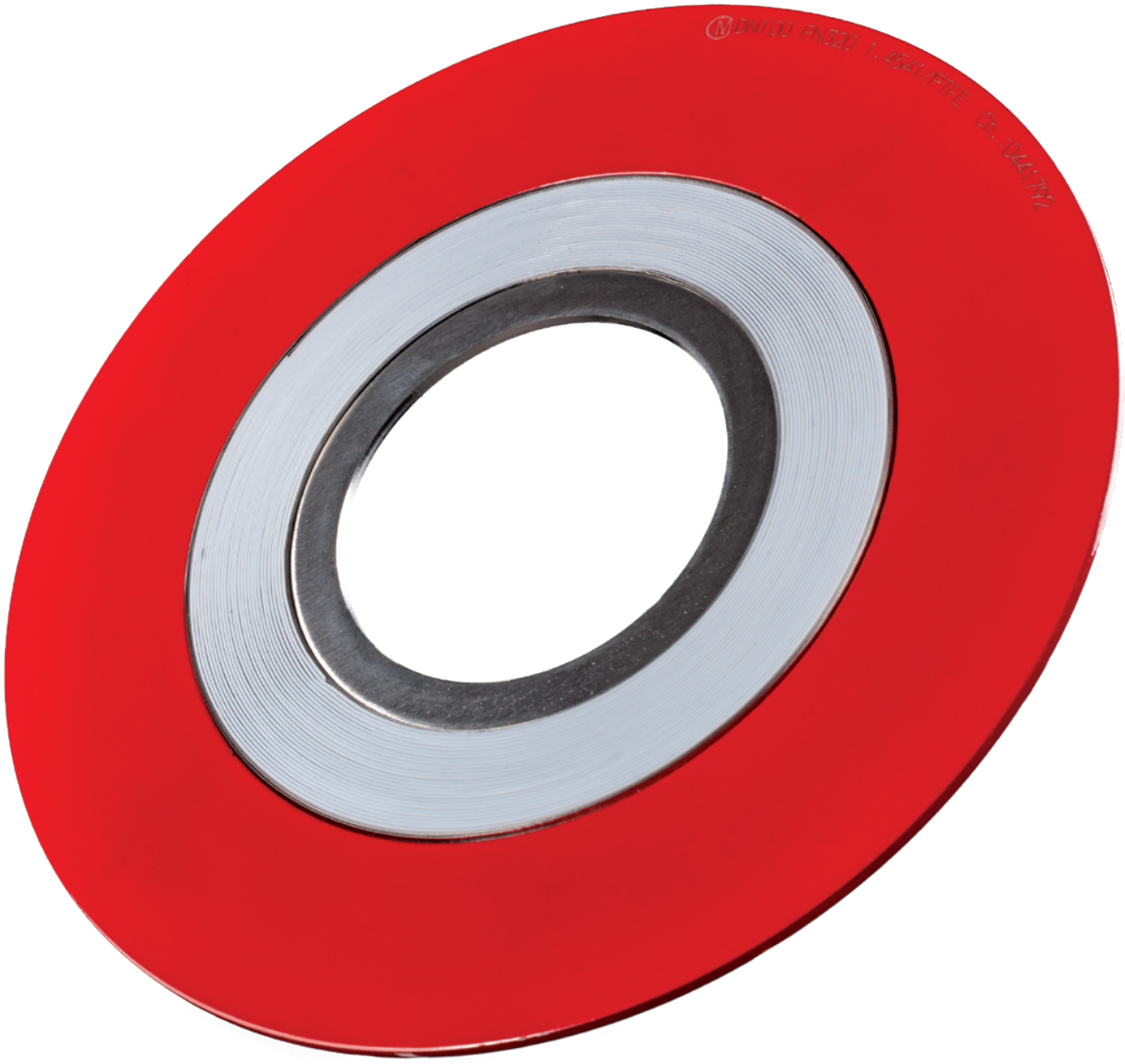
SWG – Spiral Wound Gaskets



Gaskets depending on the design fulfill:

- characteristic values according to EN 13555
- TA Luft according to VDI 2440
- BAM for oxygen applications

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Spiral wound gaskets

„Möller gaskets stand for highest quality at competitive prices. Our quality in spiral wound gaskets ensures reproducible sealing properties for you. This guarantees plant safety and availability".

Designs

The spiral-wound gasket is one of the most commonly used metal/ soft-material gaskets. It consists of alternating metal coils and a soft, non-metallic filling. The inner and outer coils are made of metal to strengthen the spiral at the inner and outer diameter. This design, in combination with the special V-shape of the spiral metal strip and the properties of the filling material, makes the spiral wound gasket the ideal gasket for applications with high demands from pressure and temperature. The application in pipelines and apparatus has been proven successful for many decades in the chemical and petrochemical industries, in oil and gas extraction and the transport industries as well as in valves and pumps. Due to the V-shape of the metallic winding tape, the spiral-wound gasket is the only gasket with significant resilience, even after long periods of operation.
Spiral wound gaskets are available in many different designs and material combinations. The four most common types are:

- without inner and outer ring type **MMD-SWG** for flanges with tongue and groove or as force shunt seal
- with centering ring (CR) type **MMD-SWG-CR-C/O** according to EN 1514-2 and EN 12560-2 (application not recommended, it is better to use an inner support ring to use)
- with inner ring (IR) or support ring type **MMD- SWG-IR**, for male/ female flanges
- with inner ring and centering ring type **MMD-SWG-CR-C/I** according to EN 1514-2 and EN 12560-2 for smooth flanges or flanges with sealing strips

The centering ring offers the following advantages:

- Optimal positioning and facilitating of the correct centering of the gasket
- Increase of the radial stability and reduction of the „blow-out risk"
- Reduction of yielding in PTFE spiral wound gaskets

The advantages of the inner ring are:

- support of the inside of the spiral and thus protection against „buckling" inwards and loss of function of the gasket is absolutely necessary with windings made of PTFE and graphite
- Turbulence of the medium is reduced by filling the inner gap between the flanges

Spiral-wound gaskets are available in a wide range of material combinations with regard to the metal strip. If an inner ring is used, the material of the inner ring is usually that of the metallic spiral strip. The most common materials of the filler strip are graphite and PTFE, but fillings of asbestos-free fibrous materials and mica are also common. The centering ring is either made of the same material as the inner ring and the metallic winding strip or made of a cheaper material, usually galvanized or powder-coated sheet steel. Depending on the combination of spiral and filling materials spiral-wound gaskets can be used at pressures of up to 200 bar and temperatures of up to 1000 °C. Characteristic values of various material combinations are shown on page 5.
If no graphite can be used due to media incompatibility, or if media contamination by graphite is feared, it is possible to prevent this by using a spiral-wound gasket with EC zone. The use of this zone can prevent diffusion through the gasket or also serve to maintain the electrical conductivity of the insulating PTFE-windings (MMD-SWG-CR-IR-EC). The zones can be placed in the center or at the edges.
Due to the gasket design, easy assembly and disassembly is guaranteed. Diameters over 1000 mm should be avoided, because of the sensitivity of the spiral windings during handling.

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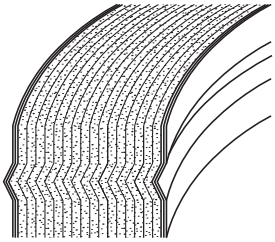
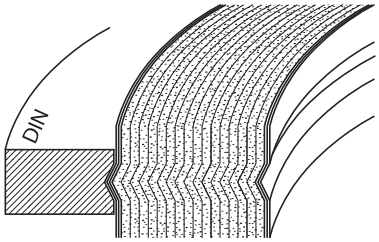
Source: Sealing Vademecum

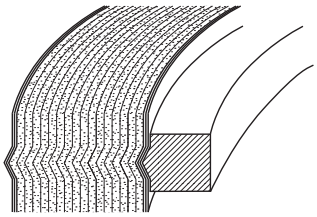
Designs of the spiral wound gaskets



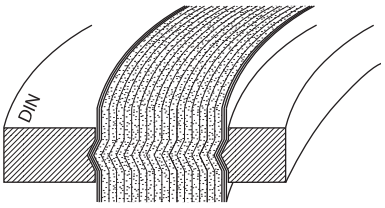
MMD-SWG
Möller Metall-Dichtungen
Spiral-Wound-Gasket



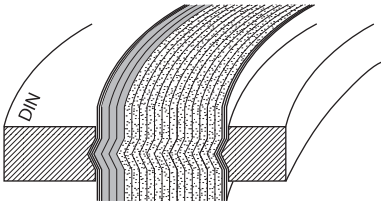
MMD-SWG-CR(-C/O)



MMD-SWG-IR



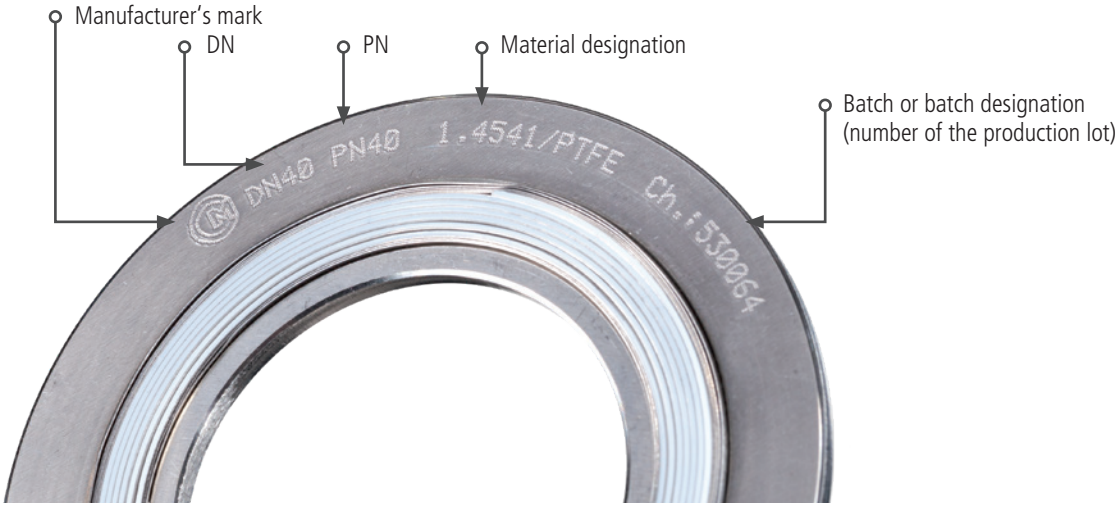
MMD-SWG-CR-IR(-C/I)



MMD-SWG-CR-IR-EC

Our gasket are marked:

The marking is made near the outer edge with the following information:



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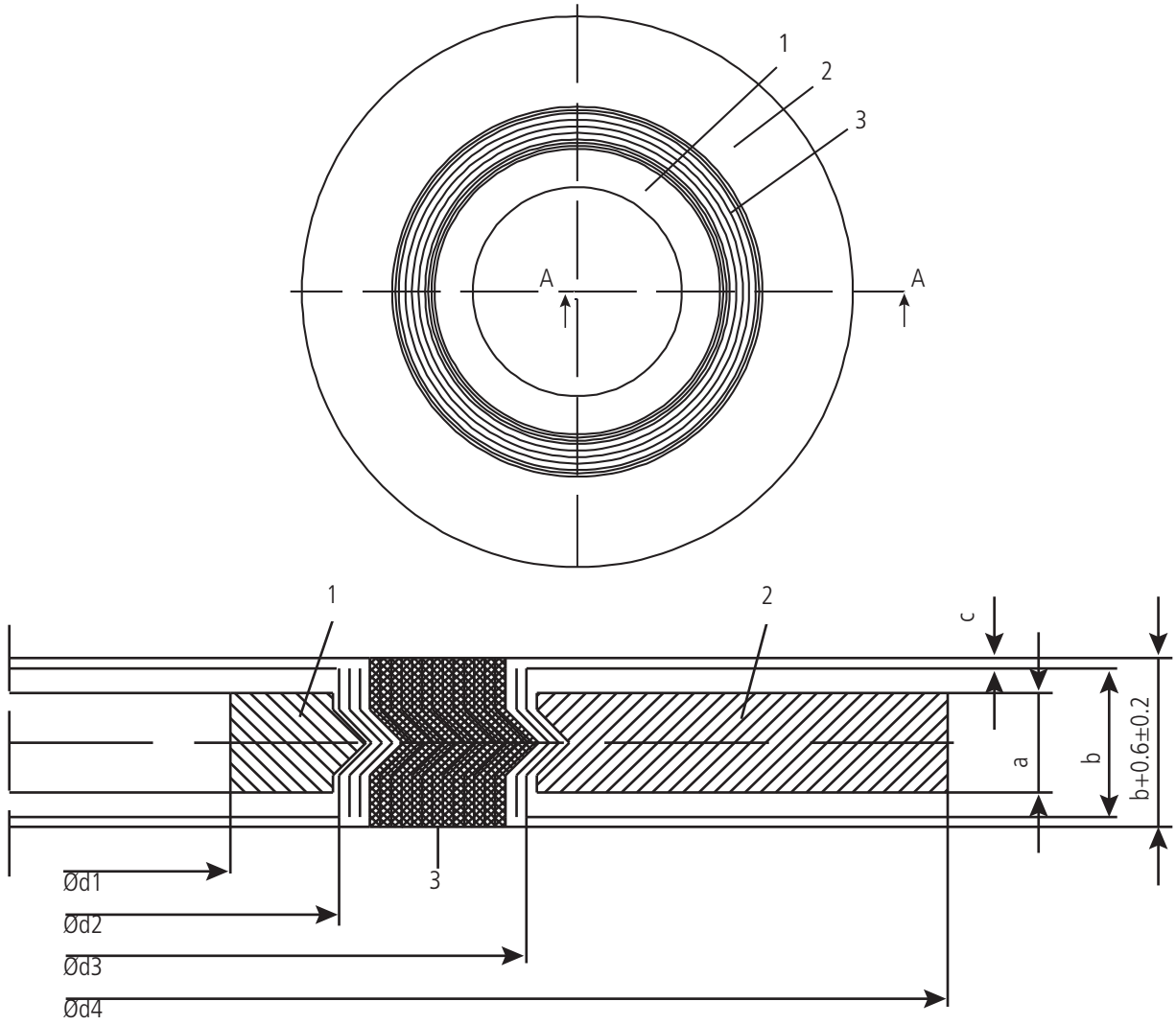
Spiral-wound gaskets with inner and outer ring



1 Inner ring | 2 Outer ring | 3 Sealing element (spiral strip + filler)

Materials and color code for gasket materials according to EN 1514-2, -4, -6, -7 and EN 12560-2, -6 with additions (common materials with material number in bold print)								
Material [1)2)]	Material number	Material group	Designation	Color code EN1514[3)]	Hardness HB	Temperature in °C		Spec. weight g/cm³
						min.	max	
Non-metallic material								
Chrysotile-asbestos [4)]			ASB	No stripes		-60	550	
PTFE / ePTFE			PTFE	White stripes		-200	230	
Mica (micaceous graphite)			Manufacturer designation	Pink stripes		-40	900	
More flexible graphite			F.G.	Grey stripes		-200	500	
Ceramics [4)]			CER	Light green stripes		-40	1.000	

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Spiral-wound gaskets - properties | Limit values

Properties and dimensions (mm)		
a	Thickness of the inner/outer ring (information from suppliers)	4 ±0.2 3 ±0.2 2 ±0.2
	Thickness of the lacquer layer	0.08 ±0.12
	Thickness of the material for the spiral of the sealing element (information from suppliers)	0.2 ±0.015
	Thickness of filler (graphite/PTFE) | (information from suppliers)	0.5 ±0.05
	Width of graphite and mica strips (unwound) (information from suppliers)	4.5 ±0.15 6.0 ±0.15 8.5 ±0.15 9.0 ±0.15
	Width of PTFE strip (unwound) (information from suppliers)	4.0 ±0.3 5.5 ±0.3 8.0 ±0.3 8.5 ±0.3
	Width of the metal strip (unwound) (information from suppliers)	4.0 +0.17/-0 5.0 +0.17/-0 7.5 +0.17/-0 8.0 +0.17/-0
b	Width of metallic spiral of the sealing element (profiled)	3.2 +0.3/-0 4.5 +0.3/-0 6.35+0.3/-0 7.2 +0.3/-0
c	Soft material overhang	0.3 ± 0.1
	Number of idle windings on the outer diameter of the sealing element	3 bis 5
	Number of idle windings on the inner diameter of the sealing element	2 bis 3
	Number of welds on the inner and outer diameter of the sealing element	mind. 4

Limit values of material combinations for spiral wound gaskets									
Material		Number	Recommended roughness of the sealing surfaces	Room temperature			Operating temperature		
				Surface pressure		E-modulus E_D	Surface pressure		Tmax
				min.	max.				
Metal strip	Filling strip		µm	MPa (N/mm²)	MPa (N/mm²)		MPa (N/mm²	MPa (N/mm²	°C
Spiral not or only chambered on one side									
X6CrNiTi18-10	Fiber material	1.4541	25 - 50	50	150		65	110	400
X6CrNiTi18-10	Graphite	1.4541	12.5 – 50	50	150		60	100	500
X15CrNiSi20-12	Graphite	1.4828	12.5 - 50	50	180		60	130	500
X6CrNiTi18-10	PTFE	1.4541	25 - 50	30	150		45	120	280
X15CrNiSi20-12	Mica	1.4828	25 - 50	50	150		65	100	750
Spiral chambered on both sides due to gasket or flange shape									
X6CrNiTi18-10	Graphite	1.4541	12.5 - 50	50	300		60	150	500
X15CrNiSi20-12	Graphite	1.4828	12.5 - 50	50	300		60	100	650
X6CrNiTi18-10	PTFE	1.4541	25 - 50	30	300		45	220	280
X15CrNiSi20-12	Mica	1.4828	25 - 50	50	300		60	100	750

Values partly supplemented according to our experience.

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Overview of metallic materials

Materials and color code for gasket materials according to EN 1514-2, -4, -6, -7 and EN 12560-2, -6 with additions (common materials with material number in bold print)								
Material [1)2)]	Material number	Material group	Designation	Color code EN1514[3)]	Hardness HB	Temperature in °C		spec. weight g/cm³
						min.	max	
Unalloyed steel	general		CRS	Silver	120	-10	450	7.85
Soft Iron Soft iron StW24 mod. DD13 (StW 24) DC01 /St 12) S235JGR2 (RSt37-2)	1.1001 1.0335 1.0330 1.0038	 EN 10111 EN 10152 EN 10305-2	Soft Iron Soft Iron Low Carbon 36		max. 90 max. 90 max. 120 130	-60 -10 -40	450 450 450	7.85 7.85 7.75 7.85
P235GH (HI) P265GH (HII) P295 GH	1.0345 1.0425 1.0481	EN 10028-2 pressure vessel steel	C 60 G		130-180	-40 -60 -60	450 450 480	7.85
16Mo3 (15 Mo 3) 13CrMo4-5 10CrMo9-10	1.5415 1.7335 1.7380	EN 10028-2 heat resistant pressure vessel steel	T1 11 / 12 22		140-170 150-180 130-180	-20 -60 -40	530 560 590	7.85
12CrMo19-5G 12CrMo19-5V	1.7362	SEW 028 resistant to pressurized water steel VdTÜV Wb 004/1	5		130-220	-60	650	7.85
P275NH (WStE 285) P355NH (WStE 355) P355NL1 (TStE 355) P460NH (WStE 460)	1.0487 1.0565 1.0566 1.8935	EN 10028-3 fine frained structural steel	A B B		130-180	-110	400	7.85
X6Cr17 X4CrNi18-10 X2CrNi19-11 X2CrNi18-9 X5CrNiMo17-12-2 X2CrNiMo17-12-2 X2CrNiMoN17-11-2 X2CrNiMo18-14-3 X2CrNiMo18-15-4 X2CrNiMoN17-13-5 X6CrNiTi18-10 X6CrNiNb18-10 X6CrNiMoTi17-12-2	1.4016 1.4301 1.4306 1.4307 1.4401 1.4404 1.4406 1.4435 1.4438 1.4439 1.4541 1.4550 1.4571	EN 10088-1-3 10028-7 stainless steel	430 304 304L (304L) 316 316L 316LN 317L 317L 317LMN 321 347 316Ti	- Yellow - Green Green - - Turquoise Blue -	130-170 120-170 120-170 120-170 120-170 120-170 120-170 120-170 120-170 120-170 130-190 130-190 130-190	-20 -200 -200 -200 -200 -200 -200 -200 -200 -200 -270 -200 -270	350 550 550 550 550 550 550 550 550 400 550 550 550	7.70 7.95 7.95 7.95 7.95 7.95 7.95 7.95 7.95 7.95 7.90 7.90 7.98
X2CrNiN23 X2CrNiMoN22-5-3	1.4362 1.4462	EN 10028-7 Duplex steel	A 2304 182 F51	-	130-190	-200	250	7.85
X15CrNiSi20-12 X15CrNiSi2520 X10NiCrAlTi32-20	1.4828 1.4841 1.4876	EN 10095 heat resistant steel	309 310 IN 800	- - White	130-190 130-190 130-220	-110 -110 -110	800 800 850	7.90 7.90 8.00
ECu57 SF-Cu	2.0060 2.0090	copper			35-70	-270	350	8.93 8.94
CuZn37	2.0321	Brass / Ms63			60-100	-200	300	8.44
Ni Ni99.2	2.4060 2.4066	Nickel	Ni	Red	80-150	-60	600	8.90
NiCu30Fe NiMo28 NiCr20CuMo NiCr15Fe7TiAl NiCr15Fe NiMo16Cr15W NiCr22Mo9Nb NiCr21Mo	2.4360 2.4617 2.4660 2.4669 2.4816 2.4819 2.4856 2.4858	z.B. Monel 400 z.B. Hasteloy B2 VdTÜV Wb 436 z. B. Inconel 600 z.B. Hasteloy C276 VdTÜV Wb 400 z.B. Inconel 625 VdTÜV Wb 499 z.B. Inconel 825 VdTÜV Wb 432/1	MON B333 A-20 INX INC 600 B575 B443 B424	Orange black - Gold Beige Gold White	100-160 200 140-200 160 200 160	-60 -29 -60 -29 -29 -29	500 425 600 535 62 535	8.88 9.22 8.42 8.89 8.44 8.14
Ti (99,8) Ti (99,97)	3.7025 3.7035	titanium 1 titanium 2	1 2	Purple Purple	110-160 120-180	-60 -60	300 350	4.50 4.50
Aluminium	-		Al		20-45	-250	300	2.70
Ag 99,97 Ag 99,85 Ni 0.15		Fine Silver FK Silver	Ag		25-45 HV 45-65 HV	-270	750	10.50
Zirkonium	-		ZIRC	-				

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Spiral-wound gaskets for flanges according to EN 1092-1

Your Gasket Professionals
Made in Germany

Quality Is Our Passion

Dimensions of spiral-wound gaskets according to EN 1514-2 for flanges according to EN 1092-1 (DIN 2632 to 2638) PN 6 to PN 160

DN	Inner-Ø [1]	Width of the inner ring	Inner-Ø of the sealing element	Width of the sealing element	Inner Ø of the guide ring	Width of the sealing element	Inner Ø of the guide ring	Outer Ø of the guide ring for each pressure stage						
	$d1$	$b_{IR\ min}$	$d_{2\ min}$	$b_{D\ min}$	$d_{3\ min}$	$b_{D\ min}$	$d_{3\ min}$	d_4						
				PN10, 16, 25, 4 0		PN 63, 100, 160		PN10	PN16	PN25	PN40	PN63	PN100	PN16
10	18	3	24	5	34	5	34	46				56		
15	23	3	29	5	39	5	39	51				61		
20	28	3	34	6	46	-	-	61						
25	35	3	41	6	53	6	53	71				82		
32	43	3	49	6	61	-	-	82						
40	50	3	56	6	68	6	68	92				103		
50	61	4,5	70	8	86	8	86	107				113	119	
65	77	4,5	86	8	102	10	106	127				137	143	
80	90	4,5	99	8	115	10	119	142				148	154	
100	115	6	127	8	143	10	147	162		168		174	180	
125	140	6	152	10	172	12	176	192		194		210	217	
150	169	6	179	10	199	12	203	218		224		247	257	
175														
200	220	6	228	10	248	12	252	273		284	290	309	324	
250	267	6	279	12	303	14	307	327	329	340	352	364	391	388
300	318	6	330	12	354	14	358	377	384	400	417	424	458	458
350	360	8	376	12	400	14	404	437	444	457	474	486	512	
400	410	6	422	14	450	17	456	488	495	514	546	543	572	
450														
500	510	6	522	14	550	17	556	593	617	624	628	657	704	
600	610	6	622	14	650	17	656	695	734	731	747	764	813	
700	710	6	722	17	756	20	762	810	804	833	852	879	950	
800	810	10	830	17	864	20	870	917	911	942	974	988		
900	910	10	930	17	964	20	970	1017	1011	1042	1084	1108		
1000	1010	10	1030	22	1074	25	1080	1124	1128	1154	1194			

Dimensions in mm - 1) The inside diameters partly comply with DIN 2690 and/or partly deviate from EN 1514-1

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Spiral-wound gaskets for flanges according to ASME B16.5 and EN 1759-1

Dimensions for gaskets according to EN 12560-2 (ASME B16.20) for flanges according to EN 1759-1 (ASME B16.5) in Class 150, 300, 600, 900, 1500, 2500															
Nominal width		Sealing element							Centering ring						
		Outer Ø		Inner Ø					Outer Ø						
		Class													
DN	NPS	150 300 600	900 1500 2500	300	600	900	1500	2500	150	300	600	900	1500	2500	
15 a)	1/2	31.8		19.1					47.8	54.1		63.5		69.9	
20 a)	3/4	39.6		25.4					57.2	66.8		69.9		76.2	
25 a)	1	47.8		31.8					66.8	73.2		79.5		85.9	
32 a)	1 1/4	60.5		47.8		39.6			76.2	82.6		88.9		104.9	
40 a)	1 1/2	69.9		54.1		47.8			85.9	95.3		98.6		117.6	
50	2	85.9		69.9		58.7			104.9	111.3		143.0		146.1	
65	2 1/2	98.6		82.6		69.9			124.0	130.3		165.1		168.4	
80	3	120.7		101.6		95.3			136.7	149.4		168.4	174.8	196.9	
100	4	149.4		127.0	120.7		117.6		174.8	181.1	193.8	206.5	209.6	235.0	
125	5	177.8		155.7	147.6		143.0		196.9	215.9	241.3	247.7	254.0	279.4	
150	6	209.6		182.6	174.8		171.5		222.3	251.0	266.7	289.1	282.7	317.5	
200	8	263.7	257.3	233.4	225.6	222.3	215.9		279.4	308.1	320.8	358.9	352.6	387.4	
250	10	317.5	311.2	287.3	274.6	276.4	266.7	270.0	339.9	362.0	400.1	435.1	435.1	476.3	
300	12	374.7	368.3	339.9	327.2	323.9		317.5	409.7	422.4	457.2	498.6	520.7	549.4	
350	14	406.4	400.1	371.6	362.0	355.6	362.0		450.9	485.9	492.3	520.7	577.9		
400	16	463.6	457.2	422.4	412.8		406.4		514.4	539.8	565.2	574.8	641.4		
450	18	527.1	520.7	474.7	469.9	463.6			549.4	596.9	612.9	638.3	704.9		
500	20	577.9	571.5	525.5	520.7		514.4		606.6	654.1	682.8	698.5	755.7		
600	24	685.8	679.5	628.7			616.0		717.6	774.7	790.7	838.2	901.7		

Dimensions in mm

a) Dimensions not suitable for slip-on and screwed flanges, consultation with manufacturer necessary

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Spiral-wound gaskets for flanges according to ASME B16.5 and EN 1759-1

Dimensions of the inner diameter of the inner ring according to EN 12560-2 for flanges according to EN 1759-1 (ASME B16.5) in Class 150, 300, 600, 900, 1500, 2500							
Nominal width		Inner Ø of the gasket					
		Class					
		150	300	600	900	1500	2500
DN	NPS	mm	mm	mm	mm	mm	mm
15[a)]	1/2	14.2					
20[a)]	3/4	20.6					
25[a)]	1	26.9					
32[a)]	1 1/4	38.1			33.3		
40[a)]	1 1/2	44.5			41.4		
50	2	55.6			52.3		
65	2 1/2	66.5			63.5		
80	3	81.0			78.7		
100	4	106.4		102.6		597.8	
125	5	131.8		128.3		124.5	
150	6	157.2		154.9		147.3	
200	8	215.9		205.7	196.9		
250	10	268.2		255.3	246.1		
300	12	317.5		307.3	292.		
350	14	349.3		342.9	320.8		
400	16	400.0		389.9	374.7	368.3	
450	18	449.3		438.2	425.5		
500	20	500.1		489.0	482.6	476.3	
600	24	603.3		590.6	590.6	577.9	

a) Dimensions not suitable for slip-on and screwed flanges, consultation with manufacturer necessary

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Spiral-wound gaskets for flanges according to ASME B16.5 and EN 1759-1

Minimum pipe wall thickness for flanges according to DIN EN 1759-1 (ASME B16.5) in Class 150, 300, 600, 900, 1500, 2500 for the use of inner rings, according to EN 12560-2							
Nominal width		Inner Ø of the gasket					
		Class					
DN	NPS	150	300	600	900	1500	2500
15[a)]	1/2	Schedule 80					
20[a)]	3/4						
25[a)]	1						
32[a)]	1 1/4	Schedule 40				Schedule 80	
40[a)]	1 1/2	Schedule 40					
50	2						
65	2 1/2						
80	3						
100	4						
125	5						
150	6						
200	8			Schedule 30	Schedule 80		
250	10			Standard weight			
300	12	Schedule 10S					
350	14				Schedule 80		
400	16						
450	18						
500	20						
600	24						

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Maximum flange hole diameters

<table>
<tr><th colspan="8">Maximum flange bore diameters for flanges according to EN 1759-1 (ASME B16.5) in Class 150, 300, 600, 900, 1500, 2500
for the use of spiral gaskets, according to EN 12560-2</th></tr>
<tr><th colspan="2" rowspan="2">Nominal width</th><th colspan="6">Inner Ø of the gasket</th></tr>
<tr><th colspan="6">Class</th></tr>
<tr><th>DN</th><th>NPS</th><th>150</th><th>300</th><th>600</th><th>900[1)]</th><th>1500[1)]</th><th>2500[1)]</th></tr>
<tr><td colspan="8"></td></tr>
<tr><td>15[a)]</td><td>1/2</td><td colspan="3" rowspan="3">welding neck flanges (WN) [2)]</td><td rowspan="5">none use flanges Class 1500</td><td colspan="2" rowspan="5">none
use flanges Class 1500 [2)]</td></tr>
<tr><td>20[a)]</td><td>3/4</td></tr>
<tr><td>25[a)]</td><td>1</td></tr>
<tr><td>32[a)]</td><td>1 1/4</td><td colspan="3" rowspan="2">slip-on flanges (SO) [3)]
welding neck flanges (WN) [2)]</td></tr>
<tr><td>40[a)]</td><td>1 1/2</td></tr>
<tr><td>50</td><td>2</td><td colspan="3" rowspan="2">slip-on flanges (SO) [3)]
welding neck flanges (WN)
independent of drilling</td></tr>
<tr><td>65</td><td>2 1/2</td></tr>
<tr><td>80</td><td>3</td><td rowspan="12">slip-on flanges (SO)
welding neck flanges (WN),
independent of drilling</td><td>SO 3) and WN, independent of drilling</td><td>see DN100 to DN300 Class600</td><td colspan="2">welding neck flanges (WN) with SW-bore (including longer projection, no slip-on flanges (SO)</td></tr>
<tr><td>100</td><td>4</td><td rowspan="4">welding neck flanges (WN) with Schedule 10S -bore according to ASME B36.19M, (including longer projection, no slip-on flanges (SO)</td><td colspan="2" rowspan="4">welding neck flanges (WN)
with SW-bore (including longer projection, no slip-on flanges (SO)</td><td rowspan="3">see DN150 up to DN600 Class 900 -1500</td></tr>
<tr><td>125</td><td>5</td></tr>
<tr><td>150</td><td>6</td></tr>
<tr><td>200</td><td>8</td></tr>
<tr><td>250</td><td>10</td><td rowspan="6">welding neck flanges (WN) with Schedule 10-bore to ASME B36.19M, (including longer projection, no slip-on flanges (SO)</td><td rowspan="6"></td></tr>
<tr><td>300</td><td>12</td></tr>
<tr><td>350</td><td>14</td></tr>
<tr><td>400</td><td>16</td></tr>
<tr><td>450</td><td>18</td></tr>
<tr><td>500</td><td>20</td></tr>
<tr><td>600</td><td>24</td></tr>
</table>

[1)] Inner rings are required for seals Class 900 DN 600; Class 1500 DN 300 to DN 600; Class 2500 DN 100 to DN 300, these rings may be used up to 1.52 mm into the tube under unfavorable combination of max. bore, eccentric mounting and additional tolerances

[2)] In these sizes the gasket is suitable for a welding neck flange with standard wall thickness and bore, if gasket and flanges are concentrically mounted. This also applies to longer projections. It is the responsibility of the user to decide whether the gasket is suitable for flanges with a larger bore can be used

[3)] In these flanges, gaskets are only suitable for concentric assembly

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Spiral-wound gaskets according to ASME B16.47 for Series A flanges

Dimensions for spiral-wound gaskets according to ASME B16.20 for flanges according to ASME B 16.47 Series A															
	Class 150			Class 300			Class 400			Class 600			Class 900		
Nominal width	Dimensions of the sealing element		Centering ring	Dimensions of the sealing element		Centering ring	Dimensions of the sealing element		Centering ring	Dimensions of the sealing element		Centering ring	Dimensions of the sealing element		Centering ring
NPS	Ø inner d1 (1)	Ø Outer d2 (2)	Ø Outer d3	Ø inner d1 (1)	Ø Outer d2 (2)	Ø Outer d3 (3)	Ø inner d1 (1)	Ø Outer d2 (2)	Ø Outer d3 (3)	Ø inner d1 (1)	Ø Outer d2 (2)	Ø Outer d3 (3)	Ø inner d1 (1)	Ø Outer d2 (2)	Ø Outer d3 (3)
26	673.1	704.9	774.7	685.8	736.6	835.2	685.8	736.6	831.9	685.8	736.6	866.9	685.8	736.6	882.7
28	723.9	755.7	831.9	736.6	787.4	898.7	736.6	787.4	892.3	736.6	787.4	914.4	736.6	787.4	946.2
30	774.7	806.5	882.7	793.8	844.6	952.5	793.8	844.6	946.2	793.8	844.6	971.6	793.8	844.6	1009.7
32	825.5	860.6	939.8	850.9	901.7	1006.6	850.9	901.7	1003.3	850.9	901.7	1022.4	850.9	901.7	1073.2
34	876.3	911.4	990.6	901.7	952.5	1057.4	901.7	952.5	1054.1	901.7	952.5	1073.2	901.7	952.5	1136.7
36	927.1	968.5	1047.8	955.8	1006.6	1117.6	955.8	1006.6	1117.6	955.8	1006.6	1130.3	958.9	1009.7	1200.2
38	977.9	1019.3	1111.3	977.9	1016.0	1054.1	971.6	1022.4	1073.2	990.6	1041.4	1104.9	1035.1	1085.9	1200.2
40	1028.7	1070.1	1162.1	1022.4	1070.1	1114.6	1025.7	1076.5	1127.3	1047.8	1098.6	1155.7	1098.6	1149.4	1251.0
42	1079.5	1124.0	1219.2	1073.2	1120.9	1165.4	1076.5	1127.3	1178.1	1104.9	1155.7	1219.2	1149.4	1200.2	1301.8
44	1130.3	1178.1	1276.4	1130.3	1181.1	1219.2	1130.3	1181.1	1231.9	1162.1	1212.9	1270.0	1206.5	1257.3	1368.6
46	1181.1	1228.9	1327.2	1178.1	1228.9	1273.3	1193.8	1244.6	1289.1	1212.9	1263.7	1327.2	1270.0	1320.8	1435.1
48	1231.9	1279.7	1384.3	1235.2	1286.0	1324.1	1244.6	1295.4	1346.2	1270.0	1320.8	1390.7	1320.8	1371.6	1485.9
50	1282.7	1333.5	1435.1	1295.4	1346.2	1378.0	1295.4	1346.2	1403.4	1320.8	1371.6	1447.8	-	-	-
52	1333.5	1384.3	1492.3	1346.2	1397.0	1428.8	1346.2	1397.0	1454.2	1371.6	1422.4	1498.6	-	-	-
54	1384.3	1435.1	1549.4	1403.4	1454.2	1492.3	1403.4	1454.2	1517.7	1428.8	1479.6	1555.8	-	-	-
56	1435.1	1485.9	1606.6	1454.2	1505.0	1543.1	1454.2	1505.0	1568.5	1479.6	1530.4	1612.9	-	-	-
58	1485.9	1536.7	1663.7	1511.3	1562.1	1593.9	1505.0	1555.8	1619.3	1536.7	1587.5	1663.7	-	-	-
60	1536.7	1587.5	1714.5	1562.1	1612.9	1644.7	1568.5	1619.3	1682.8	1593.9	1644.7	1733.6	-	-	-

Dimensions in mm
(1) Inner diameter (d1) - tolerance of NPS 26-34 ± 0.8 mm, tolerance of NPS 36-60 ± 1.3 mm
(2) Outer diameter (d2) - tolerance of from NPS 26-60 ± 1.5 mm
(3) Outer diameter centering ring (d3) - tolerance ± 0.8 mm
(4) There are no flanges from NPS 50 and larger

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Spiral wound gaskets according to ASME B16.47 for flanges series B

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Dimensions for spiral-wound gaskets according to ASME B16.20 for flanges according to ASME B 16.47 Series B															
	Class 150			Class 300			Class 400			Class 600			Class 900		
Nominal width	Dimensions of the sealing element		Centering ring	Dimensions of the sealing element		Centering ring	Dimensions of the sealing element		Centering ring	Dimensions of the sealing element		Centering ring	Dimensions of the sealing element		Centering ring
NPS	Ø inner d1 (1)	Ø Outer d2 (2)	Ø Outer d3	Ø inner d1 (1)	Ø Outer d2 (2)	Ø Outer d3 (3)	Ø inner d1 (1)	Ø Outer d2 (2)	Ø Outer d3 (3)	Ø inner d1 (1)	Ø Outer d2 (2)	Ø Outer d3 (3)	Ø inner d1 (1)	Ø Outer d2 (2)	Ø Outer d3 (3)
26	673.1	698.5	725.4	673.1	711.2	771.7	666.8	698.5	746.3	663.7	714.5	765.3	692.2	749.3	838.2
28	723.9	749.3	776.2	723.9	762.0	825.5	714.5	749.3	800.1	704.9	755.7	819.2	743.0	800.1	901.7
30	774.7	800.1	827.0	774.7	812.8	886.0	765.3	806.5	857.3	778.0	828.8	879.6	806.5	857.3	958.9
32	825.5	850.9	881.1	825.5	863.6	939.8	812.8	860.6	911.4	831.9	882.7	933.5	863.6	914.4	1016.0
34	876.3	908.1	935.0	876.3	914.4	993.9	866.9	911.4	962.2	889.0	939.8	997.0	920.8	971.6	1073.2
36	927.1	958.9	987.6	927.1	965.2	1047.8	917.7	965.2	1022.4	939.8	990.6	1047.8	946.2	997.0	1124.0
38	974.9	1009.7	1044.7	1009.7	1047.8	1098.6	971.6	1022.4	1073.2	990.6	1041.4	1104.9	1035.1	1085.9	1200.2
40	1022.4	1063.8	1095.5	1060.5	1098.6	1149.4	1025.7	1076.5	1127.3	1047.8	1098.6	1155.7	1098.6	1149.4	1251.0
42	1079.5	1114.6	1146.3	1111.3	1149.4	1200.2	1076.5	1127.3	1178.1	1104.9	1155.7	1219.2	1149.4	1200.2	1301.8
44	1124.0	1165.4	1197.1	1162.1	1200.2	1251.0	1130.3	1181.1	1231.9	1162.1	1212.9	1270.0	1206.5	1257.3	1368.6
46	1181.1	1224.0	1255.8	1216.2	1254.3	1317.8	1193.8	1244.6	1289.1	1212.9	1263.7	1327.2	1270.0	1320.8	1435.1
48	1231.9	1270.0	1306.6	1263.7	1311.4	1368.6	1244.6	1295.4	1346.2	1270.0	1320.8	1390.7	1320.8	1371.6	1485.9
50	1282.7	1325.6	1357.4	1317.8	1355.9	1419.4	1295.4	1346.2	1403.4	1320.8	1371.6	1447.8	-	-	-
52	1333.5	1376.4	1408.2	1368.6	1406.7	1470.2	1346.2	1397.0	1454.2	1371.6	1422.4	1498.6	-	-	-
54	1384.3	1422.4	1463.8	1403.4	1454.2	1530.4	1403.4	1454.2	1517.7	1428.8	1479.6	1555.8	-	-	-
56	1444.8	1478.0	1514.6	1479.6	1524.0	1593.9	1454.2	1505.0	1568.5	1479.6	1530.4	1612.9	-	-	-
58	1500.1	1528.8	1579.6	1535.2	1573.3	1655.8	1505.0	1555.8	1619.3	1536.7	1587.5	1663.7	-	-	-
60	1557.3	1586.0	1630.4	1589.0	1630.4	1706.6	1568.5	1619.3	1682.8	1593.9	1644.7	1733.6	-	-	-

Dimensions in mm
(1) Inner diameter (d1) - tolerance of NPS 26-34 ± 0.8 mm, tolerance of NPS 36-60 ± 1.3 mm
(2) Outer diameter (d2) - tolerance of from NPS 26-60 ± 1.5 mm
(3) Outer diameter centering ring (d3) - tolerance ± 0.8 mm
(4) There are no flanges from NPS 50 and larger

Inner rings according to ASME B16.47 - flanges form A and B

Inner ring dimensions for spiral-wound seals - ASME B16.47 - Series A					
Nominal width	Class				
NPS	150	300	400	600	900 [1]
26	654.1	654.1	660.4	647.7	660.4
28	704.9	704.9	711.2	698.5	711.2
30	755.7	755.7	755.7	755.7	768.4
32	806.5	806.5	812.8	812.8	812.8
34	857.3	857.3	863.6	863.6	863.6
36	908.1	908.1	917.7	917.7	920.8
38	958.9	952.5	952.5	952.5	1009.7
40	1009.7	1003.3	1003.3	1009.7	1060.5
42	1060.5	1054.1	1051.1	1066.8	1111.3
44	1111.3	1104.9	1104.9	1111.3	1155.7
46	1162.1	1152.7	1168.4	1162.1	1219.2
48	1212.9	1209.8	1206.5	1219.2	1270.0
50	1263.7	1244.6	1257.3	1270.0	-
52	1314.5	1320.8	1308.1	1320.8	-
54	1358.9	1352.6	1352.6	1378.0	-
56	1409.7	1403.4	1403.4	1428.8	-
58	1460.5	1447.8	1454.2	1473.2	-
60	1511.3	1524.0	1517.7	1530.4	-

- all dimensions in mm
- inner ring thickness between 2.97 and 3.33 mm
- tolerance of inner ring ± 3.0 mm
- inner ring for use with pipe walls of 9.53 mm and thicker

[1] There are no flanges from NPS 50 and larger

Inner ring dimensions for spiral wound seals - ASME B16.47 - Series B					
Nominal width	Class				
NPS	150	300	400	600	900 [1]
26	654.1	654.1	654.1	644.7	666.8
28	704.9	704.9	701.8	685.8	717.6
30	755.7	755.7	752.6	752.6	781.1
32	806.5	806.5	800.1	793.8	838.2
34	857.3	857.3	850.9	850.9	895.4
36	908.1	908.1	898.7	901.7	920.8
38	958.9	971.6	952.5	952.5	1009.7
40	1009.7	1022.4	1000.3	1009.7	1060.5
42	1060.5	1085.9	1051.1	1066.8	1111.3
44	1111.3	1124.0	1104.9	1111.3	1155.7
46	1162.1	1178.1	1168.4	1162.1	1219.2
48	1212.9	1231.9	1206.5	1219.2	1270.0
50	1263.7	1367.0	1257.3	1270.0	-
52	1314.5	1317.8	1308.1	1320.8	-
54	1365.3	1365.3	1352.6	1378.0	-
56	1422.4	1428.8	1403.4	1428.8	-
58	1478.0	1484.4	1454.2	1473.2	-
60	1535.2	1557.3	1517.7	1530.4	-

- all dimensions in mm
- inner ring thickness between 2.97 and 3.33 mm
- tolerance of inner ring ± 3.0 mm
- inner ring for use with pipe walls of 9.53 mm and thicker

[1] There are no flanges from NPS 50 and larger

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Individually made according to customer requirements

Order example:

Spiral-wound seals with centering and inner ring, as well as EC zone (diffusion barrier or maintenance of electrical conductivity)
MMD-SWG-CR-IR-EC
DN 80
PN10-40 according to EN 1514-2
1.4541/graphite/PTFE

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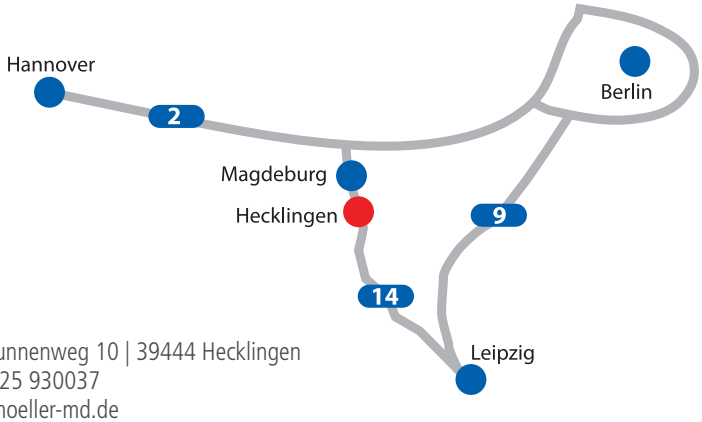

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