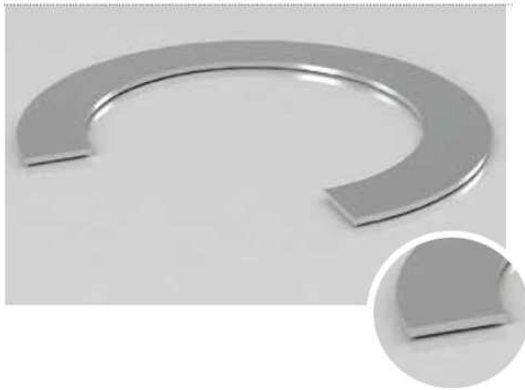




FLAT SOFT
METALLIC GASKETS




“Water-Jet Cutting Service for immediate response”

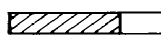
Characteristics

- Comdiflex produces precision-cut flat gaskets to any shape and size from any sheet material.
- Our flat gaskets can be manufactured from an **extensive spectrum of materials, rubbers, flexible graphite, PTFE, non asbestos sheet products and a variety of metals and alloys, available in our comprehensive stock.**

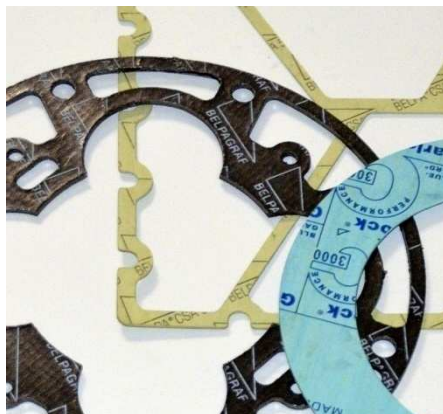
Corrugated gaskets are an excellent choice **for demanding environments of valves, gas, heat exchangers applications.** They can be manufactured in a wide range of shapes and with or without pass partition bars.



FLAT SOFT
MATERIAL GASKETS

PROFILE	CROSS-SECTION
A1	

Soft-material gaskets can be manufactured from an extensive spectrum of materials, rubbers, flexible graphite, PTFE, non asbestos sheet products.



Depending on the material selection flat soft material gaskets can be used in a large range of application in all branches of industry. Within a temperature range of - 200 °C up to a maximum of + 550 °C. The materials should be selected depending on the medium, medium concentration, temperature and type of flange being used.

As a general rule, thin gaskets are preferred to thicker ones. The usual thickness of gaskets is 1; 1,5; 2 and 3 mm. PTFE gaskets should be used in the thinnest size possible.

The surface finish of the flange should determine the gasket thickness to be used. The better the flange surface, the thinner the gasket can be.

Surface Pressure

In order to avoid collapse, the sealing surface pressure must be between σ_{\min} and σ_{\max}

Profile	Materials	Surface Pressure (N/mm ²)			
		T = 20°C		T = 300°C	
		σ_{\min}	σ_{\max}	σ_{\min}	σ_{\max}
A1	A.F. thickness 1 mm	60	170	72	140
	A.F. thickness 1,5 mm	50	130	60	100
	A.F. thickness 2 mm	40	90	52	75
	A.F. thickness 3 mm	30	60	40	48
	PTFE	15	90	-	-
	Rubber	2	10	-	-

Graphite Gaskets - Rivatherm®

Gaskets made from Graphite RivaTherm Super have a wide range of application, with corrosive media or at high temperatures.

RivaTherm Super laminated is made from expanded graphite with several metal sheet in layers.

The lamination is provided by a low chloride and sulphide reaction polymer in a sandwich joint. Because of its many layers, the laminate can withstand very high pressures.





RivaTherm Super with tanged sheet metal reinforcement and impregnation is a glue-free graphite sheet which is impregnated. The impregnation of RivaTherm Super leads to a significant increase in stability.

RivaTherm Super:

- Purity > 99% or > 99.85%
- Temperature range:
from - 200°C to + 550°C

RivaTherm Super Plus:

- Purity 99%
- Temperature range:
from - 200°C to 550°C

PROFILE	CROSS-SECTION
RivaTherm	
RivaTherm Super (with plain sheet metal)	
RivaTherm Super (with tanged sheet metal)	
RivaTherm Super Plus (with double tanged sheet metal)	

The sealing surface pressure must be between σ_{\min} and σ_{\max}

Profile	Materials	Surface Pressure (N/mm ²)			
		T = 20°C		T = 300°C	
		σ_{\min}	σ_{\max}	σ_{\min}	σ_{\max}
A1	Rivatherm-Super	10	120	10	110

Other Soft Materials Flat Gaskets

Fibre sheets

- Usually made from: natural rubber matrix, with embedded aramide, glass, carbon and/or calcium sulphate fibres. A wide range of different types are available.
- Operating range limited to 150°C up to 180°C. High-quality examples can be used at higher T°
- Due to the wide variety of applications available and critical importance of the sealing connections it is necessary to select and install the correct fibre sheet material gasket. We are side by side with many technological centers in the fields on engineering and materials science, constantly investing in production technology to maintain the highest standards of quality

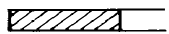
PTFE flat gaskets

- More commonly used in flange connections where there are high levels of chemical attack
- PTFE gaskets should be as thin as possible in order to limit the cold flow.
- Filled or modified PTFE has a higher resistance to compressive strength. Universal media resistances of filled PTFE are limited.

Rubber flat gaskets

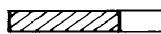
- Wide range of application.
- Optimal solution at low temperatures and pressures
- For each specific application there is a wide selection of rubber qualities available such as NR, NBR, EPDM or FKM.
- Water-Jet Cutting Service for immediate response.


**METALLIC
GASKETS**

PROFILE	CROSS-SECTION
A1	

Flat Gaskets also can be manufactured from a different range of metals and special alloys, in order to make them suitable for severe applications (aggressive medium, high temperatures or pressures, etc). Depending on the material flat metallic gaskets

can withstand temperatures from -200°C to over 600°C and pressures from relatively low to extremely high. The flange surface and the sealing material of the gasket will determinate the thickness of metallic gasket: the better the flange surface is, the thinner the gasket can be.

Profile	Cross-section	Materials	KO-KD (mm)	K _i	R _z (µm)
A1		Metal	b _D	b _D +5	1,6 to 6,3

* Recommended surface roughness of flange sealing surfaces

Soft metallic materials, as aluminium or silver, need relatively low surface pressure. Harder materials, such as steel, require high sealing pressure to become deformed.

The sealing surface pressure must be between σ_{min} and σ_{max}

Profile	Materials	Surface Pressure (N/mm ²)			
		T = 20°C		T = 300°C	
		σ_{min}	σ_{max}	σ_{min}	σ_{max}
A4 to A19 A5S, A5BS B2, B3	Mild Carbon Steel	265	600	265	315
	Mild Carbon Steel coated with Copper	135	600	135	390
	Stainless Steel 1.4541	335	700	335	600
	Stainless Steel 1.4541 coated with silver	100	700	100	600
	Stainless Steel 1.4828	400	900	400	750
	Stainless Steel 1.4828 coated with silver	100	900	100	750
	Alloy-Steel 1.7362	400	900	400	730
	Alloy-Steel 1.7335	300	675	300	585
	Nickel	190	510	190	480
	Titanium	240	640	240 (1)	275 (1)
	Monel	260	660	260	650
	Silver	200	440	200	240
	Copper	135	300	135	150
Aluminium	70	140	-	-	



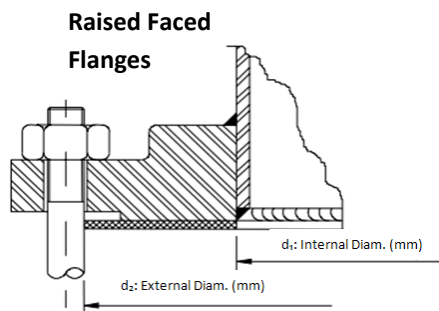


FLAT SOFT
MATERIAL GASKETS

TECHNICAL DATA

ASME B 16.21 (Flanges RF)

d1: Internal diameter (mm)
d2: External diameter (mm)



Tolerances:		
DN	d1	d2
1/2" to 12"	+/- 1,5	+0 - 1,5
14" to 24"	+/- 3,0	+0 - 3,0

NPS (")	d ₁	d ₂				
		150 L	300 L	400 L	600 L	900 L
1/2"	21,3	47,8	53,8	53,8	53,8	63,5
3/4"	26,9	57,2	66,5	66,5	66,5	69,9
1"	33,3	66,5	73,2	73,2	73,2	79,2
1 1/4"	42,2	76,2	82,6	82,6	82,6	88,9
1 1/2"	48,5	85,9	95,3	95,3	95,3	98,6
2"	60,5	104,6	111,3	111,3	111,3	142,7
2 1/2"	73,2	124	130	130	130	165,1
3"	88,9	136,7	149,4	149,4	149,4	168,1
3 1/2"	101,6	162,1	165,1	162,1	162,1	
4"	114,3	174,8	180,8	177,8	193,5	206,2
5"	141,2	196,9	215,9	212,9	241,3	247,7
6"	168,1	222,3	251	247,7	266,7	289,1
8"	218,9	279,4	307,8	304,8	320,5	358,6
10"	273,1	339,9	362	358,6	400,1	434,8
12"	323,9	409,7	422,1	419,1	457,2	498,3
14"	355,6	450,9	485,6	482,6	492,3	520,7
16"	406,4	514,4	539,8	536,4	565,2	574,5
18"	457,2	549,1	596,9	593,9	612,6	638
20"	508	606,6	654,1	647,7	682,8	698,5
24"	609,6	717,6	774,7	768,4	790,4	838,2

ASME B 16.21 Series A (Flanges RF, ASME B16.47)

d1: Internal diameter (mm)
d2: External diameter (mm)
DN: Nominal diameter (mm)
PN: Nominal Pressure (bars)

Tolerances:	
d1	d2
+/- 3,0	+0 - 3,0

NPS	d ₁	d ₂			
		150 L	300 L	400 L	600 L
22"	558,8	660,4	704,85	701,8	733,55
26"	660,4	774,7	835,15	831,85	866,65
28"	711,2	831,85	898,65	892,05	914,4
30"	762	882,65	952,5	946,15	971,55
32"	812,8	939,8	1006,35	1003,3	1022,35
34"	863,6	990,6	1057,15	1054,1	1073,15
36"	914,4	1047,75	1117,6	1117,6	1130,3
38"	965,2	1111,25	1054,1	1073,4	1104,9
40"	1016	1162,05	1114,5	1132,33	1155,7
42"	1066,8	1219,2	1165,35	1178,05	1219,2
44"	1117,6	1276,35	1219,2	1231,9	1270
46"	1168,4	1327,15	1273,05	1289,05	1327,4
48"	1219,2	1384,3	1323,85	1346,2	1390,65
50"	1270	1435,1	1377,95	1403,35	1447,8
52"	1320,8	1492,25	1428,75	1454,4	1498,6
54"	1371,6	1549,4	1492,25	1517,65	1555,75
56"	1422,4	1606,55	1543,05	1568,45	1612,9
58"	1473,2	1663,7	1593,85	1619,25	1663,7
60"	1524	1714,5	1644,65	1682,75	1720,85

TECHNICAL DATA

ASME B 16.21 (Flanges FF)

d1: Internal diameter (mm)

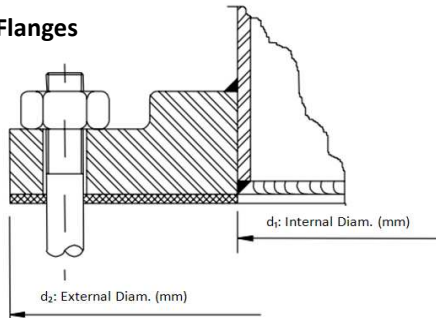
d2: External diameter (mm)

BCD: Bolt Circle Diameter

Nº of BH: Nº of Bolt Holes

Hole Diam.: Hole Diameter

Full Faced Flanges



NPS	PN : 150 Lbs				
	d ₁	d ₂	Nº of BH	Hole Diam.	BCD
1/2"	21,3	88,9	4	15,7	60,5
3/4"	26,9	98,6	4	15,7	69,9
1"	33,3	108	4	15,7	79,2
1 1/4"	42,2	117,6	4	15,7	88,9
1 1/2"	48,5	127	4	15,7	98,6
2"	60,5	152,4	4	19,1	120,7
2 1/2"	73,2	177,8	4	19,1	139,7
3"	88,9	190,5	4	19,1	152,4
3 1/2"	101,6	215,9	8	19,1	177,8
4"	114,3	228,6	8	19,1	190,5
5"	141,2	254	8	22,4	215,9
6"	168,1	279,4	8	22,4	241,3
8"	218,9	342,9	8	22,4	298,5
10"	273,1	406,4	12	25,4	362
12"	323,9	482,6	12	25,4	431,8
14"	355,6	533,4	12	28,4	476,3
16"	406,4	596,9	16	28,4	539,8
18"	457,2	635	16	31,8	577,9
20"	508	698,5	20	31,8	635
24"	609,6	812,8	20	35,1	749,3

Tolerances:				
DN	d ₁	d ₂	K	H
1/2" to 12"	+/- 1,5	+0 - 1,5	+/- 1,5	+/- 0,7
14" to 24"	+/- 3,0	+0 - 3,0	+/- 1,5	+/- 0,7

ASME B 16.21 Series B (Flanges FF, ASME B16.47)

d1: Internal diameter (mm)

d2: External diameter (mm)

DN: Nominal diameter (mm)

PN: Nominal Pressure (bars)

NPS	d ₁	d ₂			
		150 L	300 L	400 L	600 L
26"	660,4	725,42	771,65	746,25	765,05
28"	711,2	776,22	825,5	800,1	819,15
30"	762	827,02	885,95	857,25	879,35
32"	812,8	881,13	939,8	911,35	933,45
34"	863,6	934,97	993,65	962,15	996,95
36"	914,4	987,55	1047,75	1022,35	1047,75
38"	965,2	1044,45	1098,55	-	-
40"	1016	1095,25	1149,35	-	-
42"	1066,8	1146,05	1200,15	-	-
44"	1117,6	1196,85	1250,95	-	-
46"	1168,4	1255,78	1317,75	-	-
48"	1219,2	1306,58	1368,55	-	-
50"	1270	1357,38	1419,35	-	-
52"	1320,8	1408,18	1470,15	-	-
54"	1371,6	1463,55	1555,75	-	-
56"	1422,4	1514,35	1593,85	-	-
58"	1473,2	1579,63	1655,83	-	-
60"	1524	1630,43	1704,85	-	-

Tolerances:	
d ₁	d ₂
+/- 3,0	+0 - 3,0

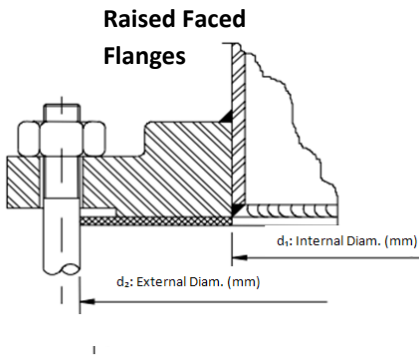
CONFORMS DIN 2690 (Flanges RF) – Raised Faced Flanges

d1: Internal diameter (mm)

d2: External diameter (mm)

DN: Nominal diameter (mm)

PN: Nominal Pressure (bars)



DN	d ₁	d ₂					
		PN 1-2.5	PN 6	PN 10	PN 16	PN 25	PN 40
4	6	30	30	30	30	30	
6	10	28	28	38	38	38	38
8	14	33	33	43	43	43	43
10	18	38	38	45	45	45	45
15	22	43	43	50	50	50	50
20	28	53	53	60	60	60	60
25	35	63	63	70	70	70	70
32	43	75	75	82	82	82	82
40	49	85	85	92	92	92	92
50	61	95	95	107	107	107	107
65	77	115	115	127	127	127	127
80	90	132	132	142	142	142	142
100	115	152	152	162	162	168	168
125	141	182	182	192	192	195	195
150	169	207	207	218	218	225	225
175	195	237	237	248	248	255	267
200	220	262	262	273	273	285	292
250	274	318	318	328	330	342	353
300	325	373	373	378	385	402	418
350	368	423	423	438	445	458	475
400	420	473	473	490	497	515	547
450	470	528	528	540	557	565	572
500	520	578	578	595	618	625	628
600	620	680	680	695	735	730	745
700	720	785	785	810	805	830	850
800	820	890	890	915	910	940	970
900	920	990	990	1015	1010	1040	1080
1000	1020	1090	1090	1120	1125	1150	1190
1200	1220	1290	1305	1340	1340	1360	1395
1400	1420	1490	1520	1545	1540	1575	1615
1600	1620	1700	1720	1770	1760	1795	1830
1800	1820	1900	1930	1970	1960	2000	
2000	2020	2100	2135	2180	2165	2230	
2200	2220	2305	2345	2380	2375		
2400	2420	2505	2555	2590	2585		
2600	2620	2705	2760	2790	2785		
2800	2820	2920	2970	3010			
3000	3020	3120	3170	3225			
3200	3220	3320	3380				
3400	3420	3520	3590				
3600	3620	3730	3800				
3800	3820	3930					
4000	4020	4130					

CONFORMS DIN 86071 (Flanges FF) – Full Faced Flanges

d1: Internal diameter (mm)

d2: External diameter (mm)

BCD: Bolt Circle Diameter

Nº of BH: Nº of Bolt Holes

Hole Diam: Hole Diameter

DN	d ₁	PN 6				PN 10			
		D	BCD	d ₂	Nº of BH	D	BCD	d ₂	Nº of BH
20	29	90	65	11	4	105	75	14	4
25	36	100	75	11	4	115	85	14	4
32	47	120	90	14	4	140	100	18	4
40	53	130	100	14	4	150	110	18	4
50	65	140	110	14	4	165	125	18	4
65	81	160	130	14	4	185	145	18	4
80	93	190	150	18	4	200	160	18	8
100	120	210	170	18	4	220	180	18	8
125	146	240	200	18	8	250	210	18	8
150	172	265	225	18	8	285	240	22	8
175	200	295	255	18	8	315	270	22	8
200	225	320	280	18	8	340	295	22	8
250	282	375	335	18	12	395	350	22	12
300	332	440	395	22	12	445	400	22	12
350	363	490	445	22	12	505	460	22	16
400	415	540	495	22	16	565	515	26	16
450	467	595	550	22	16	615	565	26	20
500	520	645	600	22	20	670	620	26	20
600	620	755	705	26	20	780	725	30	20
700	723	860	810	26	24	895	840	30	24
800	825	957	920	30	24	1015	950	33	24
900	928					1115	1050	33	28
1000	1032					1230	1160	36	28
1200	1220					1455	1380	39	32
1400	1420					1675	1590	42	36
1600	1620					1915	1820	48	40
1800	1820					2115	2020	48	44
2000	2020					2325	2230	48	48

DN	d ₁	PN 16				PN 25			
		D	BCD	d ₂	Nº of BH	D	BCD	d ₂	Nº of BH
20	29	105	75	14	4	105	75	14	4
25	36	115	85	14	4	115	85	14	4
32	47	140	100	18	4	140	100	18	4
40	53	150	110	18	4	150	110	18	4
50	65	165	125	18	4	165	125	18	4
65	81	185	145	18	4	185	145	18	8
80	93	200	160	18	8	200	160	18	8
100	120	220	180	18	8	235	190	22	8
125	146	250	210	18	8	270	220	26	8
150	172	285	240	22	8	300	250	26	8
175	200	315	270	22	8	330	280	26	12
200	225	340	295	22	12	360	310	26	12
250	282	405	355	26	12	425	370	30	12
300	332	460	410	26	12	485	430	30	16
350	363	520	470	26	16	555	490	33	16
400	415	580	525	30	16	620	550	36	16
450	467	640	585	30	20	-	-	-	-
500	520	715	650	33	20	730	660	36	20
600	620	840	770	36	20	845	770	39	20
700	723	910	840	36	24	960	875	42	24
800	825	1025	950	39	24	1085	990	48	24
900	928	1125	1050	39	28	1185	1090	48	28
1000	1032	1255	1170	42	28	1320	1210	56	28
1200	1220	1485	1390	48	32				
1400	1420	1685	1590	48	36				
1600	1620	1930	1820	56	40				
1800	1820	2130	2020	56	44				
2000	2020	2345	2230	62	48				

