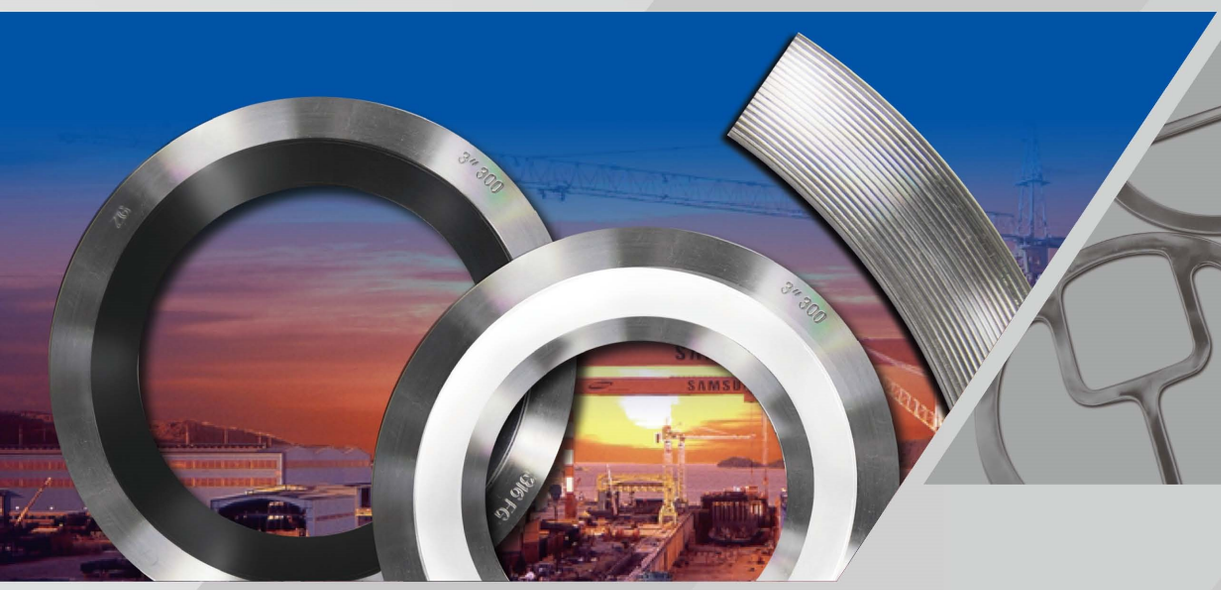
ISO 9001 : 2008 / ISO 14001 : 2004 / OHSAS 18001 : 2007

SEMI METALLIC GASKET

One Source for Sealing Solution Provider to
every of your Specific Application



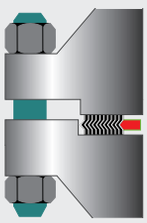
CARTEC Sealing Technologies Co.,Ltd

SPIRAL WOUND GASKET

Standard Type

A spiral wound gasket is manufactured by spirally winding a preformed metal strip and a filler on the outer periphery of metal winding mandrels. The winding mandrel outside diameter forms the inner diameter of the gasket and the superposed metal and non-metallic windings are continually wound until the required outer diameter is attained.

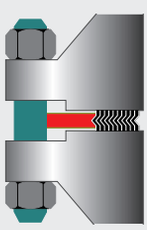
C#SI



Inner Ring Style

Solid inner metal ring acts as a compression stopper. To prevent accumulation of solids, reduce turbulent flow of process fluids and minimize erosion. Damages of gasket between flange bore and the inside diameter, the annular space is filled up by solid inner metal ring. Suitable for male and female pipe flanges.

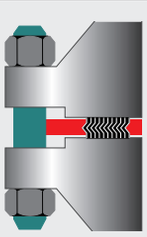
C#SO



Outer Ring Style

Solid outer ring accurately locates the gasket on the flange face to give the additional radial strength to prevent the gasket blowout and acts as a compression limiter. In case of installing the outer ring, it is very easy to install the gasket to flange face because the end of outer ring will touch at bolts. Suitable for use with flat face and raised face flanges. For class 900 and above an internal ring is recommended.

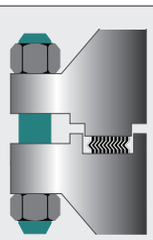
C#SIO



In-Outer Ring Style

A inner ring and outer ring type gasket will give an additional compression limiting stopper for gasket inner and outer side. It will prevent the corrosions on flange face at annular space. Suitable for use with flat face and raised face flanges and specified for high pressure temperature service Class 900 and above or where corrosive or toxic media are present.

C#SR



Basic Style

Basic construction type, inner and outer diameters are reinforced with several piles of metal without filler to give greater stability and better compression characteristics. Suitable for tongue and groove, male and female or grooved to flat face flange assemblies.

C#SR-ROUND

C#SR-OBROUND

C#SR-RECTANGLE

C#SR-OVAL

C#SR-DIAMOND

C#SR-PEAR

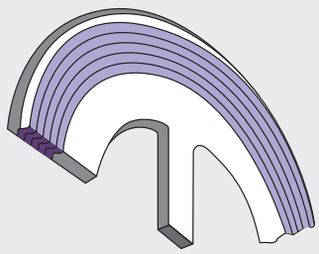
Recommended Compressed Thickness

INITIAL GASKET THICKNESS	THICKNESS
0.062in (1.6mm)	0.050in/0.055in (1.3/1.4mm)
0.100in (2.5mm)	0.075in/0.080in (1.9/2.0mm)
0.125in (3.2mm)	0.090in/0.100in (2.3/2.5mm)
0.175in (4.5mm)	0.125in/0.135in (3.2/3.4mm)
0.250in (6.4mm)	0.180in/0.200in (4.6/5.1mm)
0.285in (7.2mm)	0.200in/0.220in (5.1/5.6mm)

SPIRAL WOUND GASKET

Other

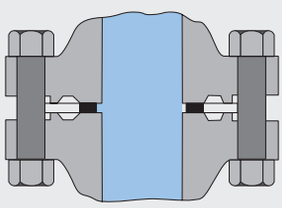
C#SIO-HE



For Heat Exchanger

C#SIO-HE is a variation of the style C#SIO spiral wound gasket, developed for use on heat exchanger, TEMA type flange arrangements. In conjunction with an inner ring, the standard spiral wound construction also supports an outer wound steel nose, designed for the purpose of accurate gasket location. It is also available with a solid metal outer ring. Consult CARTEC Technical Department for minimum cross sectional width of solid metal outer ring.

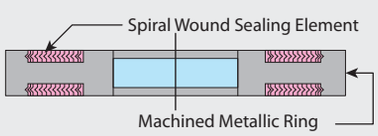
C#SO-RJ



For RTJ Flange

This style designates a specially sized C#SO-RJ gasket to be used on standard ring joint flanges. The outer ring is dimenstioned to cover the ring joint grooves and to prevent the spiral wound portion from entering the groove. This type of gasket should be used only as a maintenance repair item.

C#SC

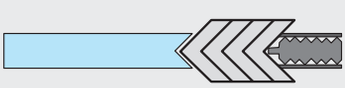


Cross-Section Through C#SC Assembly

For Problematic Flange

The C#SC gasket consists of two spiral wound gaskets placed in a specially machined metallic ring as illustrated. The major advantages of the C#SC are its high recovery, and ease of handling compared to standard spirals, due to its integral construction.

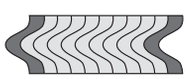
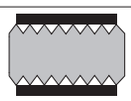
C#SKRO



For Thermal Cycle

The C#SKRO consists of two sealing face. The major advantage of the C#SKRO are its high recovery, and excellent sealing performance of handling compared to standard spirals, due to integral constructions.

Surface Finish Requirements

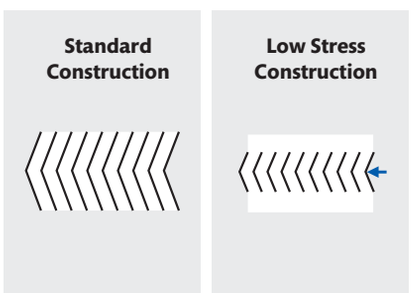
Gasket Description	Gasket Cross Section	Flange Surface Finish Microinch Ra	Flange Surface Finish Micrometer Ra
Spiral Wound Gasket		125 - 250	3.2 - 6.3
Kammprofile Gasket		125 - 250	3.2 -6.3
Metal Jacketed Gaskets		100-125	2.5 MAX

Important - Under no circumstances should flange sealing surfaces be machined in a manner that tool marks would extend radially across the sealing surface. Such tool marks are practically impossible to seal regardless of the type of gasket used.

SPIRAL WOUND GASKET

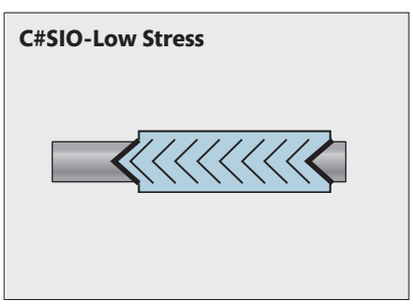
Low Stress is in a class by itself for class 150 & 300 flanges

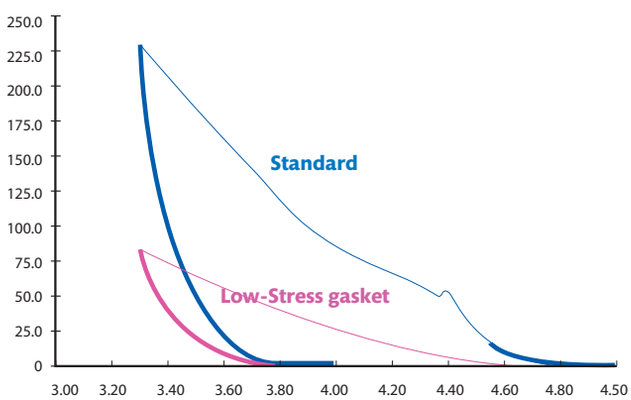
The Low-Stress gasket offers the same high integrity seal associated with the spiral wound gasket however, the C#SIO-Low Stress has been designed in such a way that compression and sealing requirements are achieved under very low seating stresses.



Low-Stress Style

Low-Stress gasket is designed to seat at only 25,000 psi bolt stress, which means you can use this revolutionary product for a wide range of lightly loaded applications. They are manufactured with high purity flexible graphite, and PTFE filler for optimum sealability, and are available for the full range of standard Class 150 and Class 300 flanges, as well as other non-standard low pressure flanges. Extruded filler allows Low-Stress gasket to be used with lightly loaded flanges.

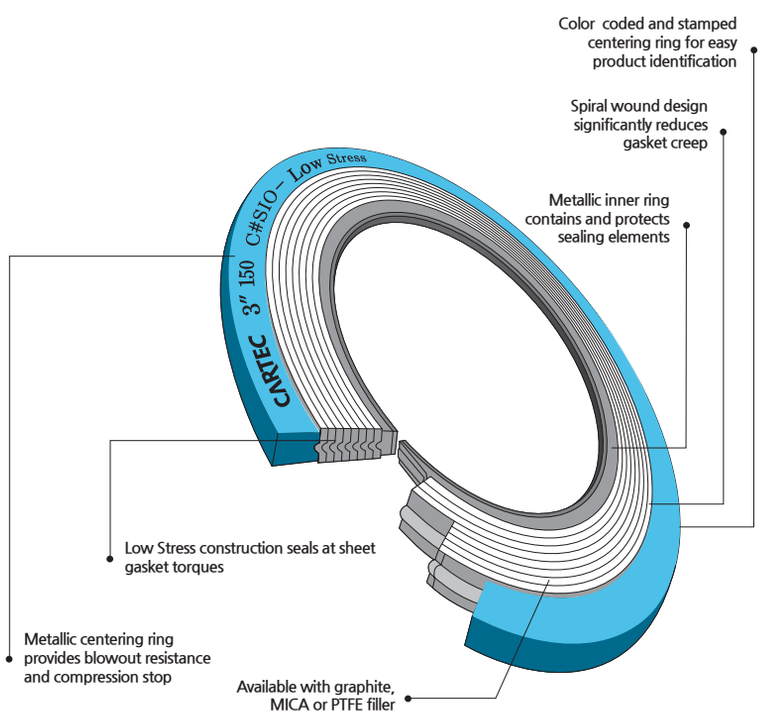




Gasket style : C#SIO
Material : 316L/FG
Original Thickness : 4.5
Original O/D : 85.9
Original I/D : 69.9
Guide Ring Thickness :
Internal : 2.93
External : 3.2
Final Thickness : 3.82

2"150

Structure of Low Stress Spiral Wound Gasket



Recommended Minimum Bolt Torque

LOWER BOLT STRESS-REDUCED FUGITIVE EMISSIONS

Cartec recommended minimum bolt torque figures for use with the "**C#SIO-Low Stress**" gasket on ASME/B 16.5 flanges.*

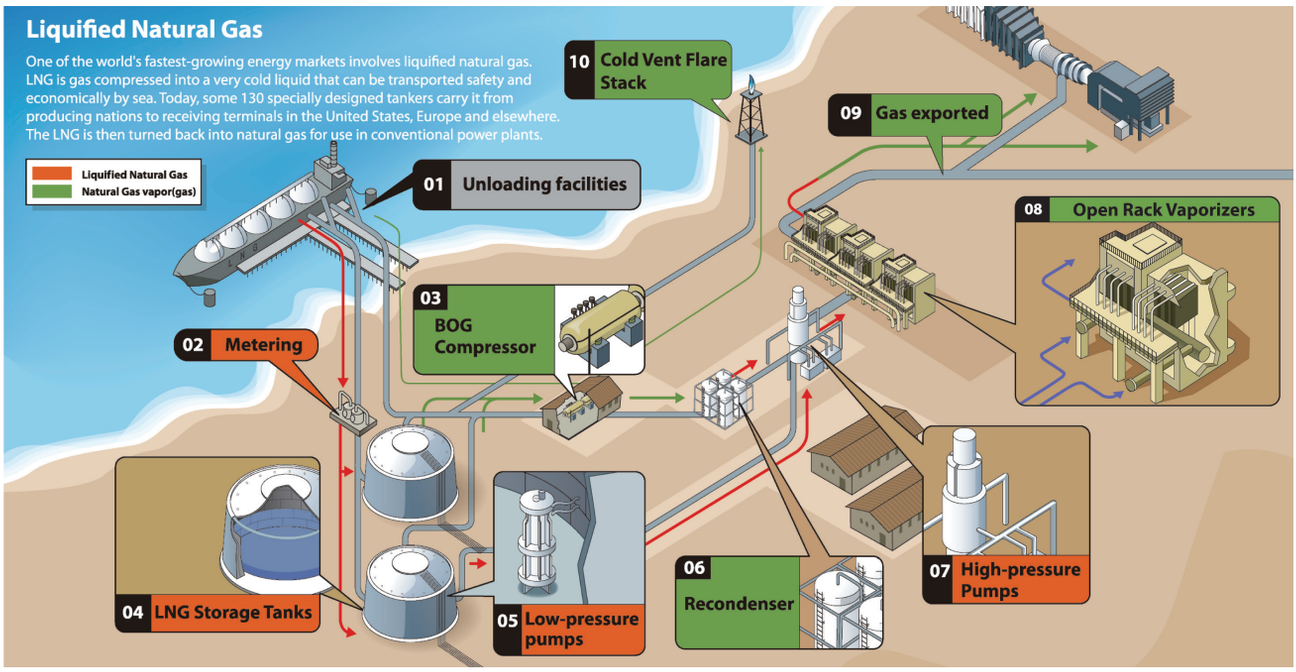
NPS (IN)	TORQUE FT.LBS.	NPS (IN)	TORQUE FT.LBS.
1/2	25	5	83
3/4	25	6	83
1	25	8	83
1 1/4	25	10	133
1 1/2	25	12	133
2	50	14	204
2 1/2	50	16	204
3	50	18	295
3 1/2	50	20	296
4	50	24	417

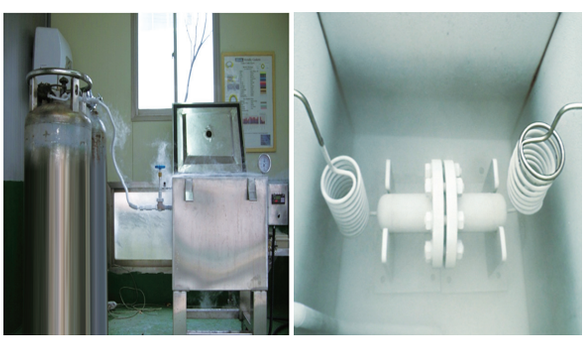
NOTE : MINIMUM REQUIRED TORQUES MAY BE EVEN LOWER DEPENDING ON GASKET SIZE AND BOLT MATERIALS.

* Above torque values are for class 150 ASME flanges

SPIRAL WOUND GASKET

LNG Service





Lloyd's Register

Type Approval Certificate Extension

This is to certify that Certificate No. 06/10008 for the undernoted products is extended and renumbered as shown.

This certificate is issued to:

PRODUCER	Cartec Sealing Technologies Co., Ltd.
PLACE OF PRODUCTION	No.128-4L/1480-2, Songjung-dong, Kangseo-Ku, Busan, 618-270, Korea
DESCRIPTION	Spiral Wound Gasket for Cryogenic Service
TYPE	CGI
APPLICATION	Marine Piping Systems for Cryogenic Service for LNG Carrier.
SPECIFIED STANDARD	LR Rules and Regulations for the Classification of Ships, Part 5, Chapter 12, July 2010 ASME B16.20
RATINGS	Nominal size : 1/2" – 36" (15A – 900A N.D.) Nominal pressure class : ANSI 150LB & ANSI 300LB Minimum Working Temperature : -196°C

"This Certificate is not valid for equipment, the design, ratings or operating parameters of which have been varied from the specimen tested. The manufacturer should notify Lloyd's Register of any modification or changes to the equipment in order to obtain a valid certificate."

The attached Design Appraisal Document No. 06/10008(E1) and its supplementary Type Approval Terms and Conditions form part of this Certificate.

All other details remain as the previous Certificate No. 06/10008 to which this extension should be attached.

Certificate No.	06/10008(E1)
Issue Date	18 April 2011
Expiry Date	17 April 2016
Sheet	1 of 1

N. Nagamune
Yokohama Design Support Office
Lloyd's Register

Lloyd's Register, registered office:
71 Fenchurch Street, London EC3M 4BS

Cryogenic Service

Liquefied natural gas (LNG) is natural gas (predominantly methane, CH4) that has been converted to liquid form for ease of storage or transport. Liquefied natural gas takes up about 1/600th the volume of natural gas in the gaseous state. It is odorless, colorless, non-toxic and non-corrosive. Hazards include flammability after vaporization into a gaseous state, freezing and asphyxia.

Cartec Sealing Technologies, Co.,Ltd was established in Sep. 2001 and had passed the strict quality inspection from many customers. The gaskets are used in all the pipe lines in the developing industry such as refinery and chemical plant, power plant and heavy industry. The major role of gasket is to prevent the leakage of application media from the piping line, and proper gaskets can be selected considering the temperature, the pressure, the application media used, application and etc. This is very important as it causes fatal defects and this leads to the losses of personnel, resources and environment unless the gaskets are chosen properly.
We are equipped the required quality system and can meet the requirements from all customers.
Especially, we got the Gasket Type Approval Certification from Lloyd company for the gaskets sealing of LNG service line after last three years of hard work.

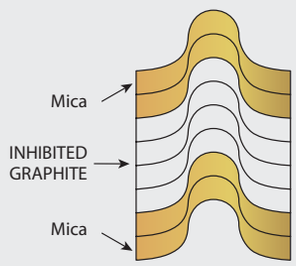
Lloyd's Register

Type Approval Certificate Extension

SPIRAL WOUND GASKET

High Temperature

C#S-H713

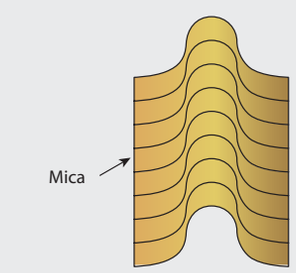


High Temperature Gasket

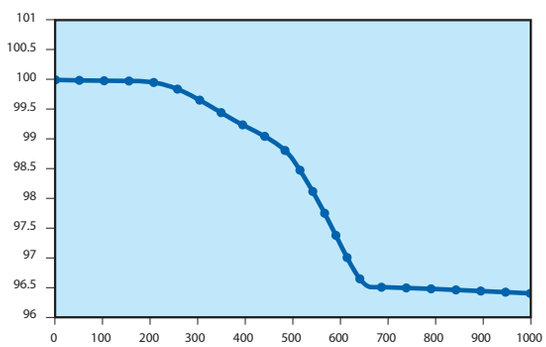
The High Operating Temperature spiral wound gasket utilises high recovery, heat treated Monel spiral windings combined with a oxidation inhibited graphite with a high temperature oxidation shield on both inside and outside diameters.
The Mica filler gasket was developed to overcome the problems associated with leakage due to the deterioration of the gasket filler materials at high temperature.

- For use up to 1,000 Centigrade
- Contains no asbestos materials
- Various metallic winding materials are available
- Available with external compression gauge Inner-Ring Type, Outer-Ring Type,

C#S-H714



Curve Weight Loss



Method : scanning on MICA(1mm thickness) at 10°c/min, starting at room tmperature up to 1000°c

Structure of Mica

Mica Flexible Sheet

Technical Data

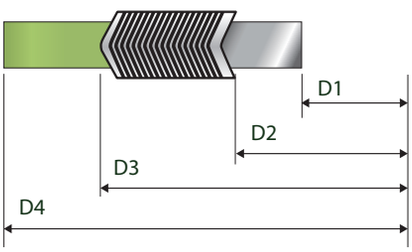
General information	Cogemica
Class of mica	Phlogopite
Binder	silicone resin
Mica content	ca 90%
Color	dark green

Composition Properties	Test Method	Cogemica
Phlogopite mica content IEC 371-2		min 90%
Silicone Binder content IEC 371-2		max 10%
Density	IEC 371-2	1.7 g/㎤(+/0.1) (106 lb/ft^3)
Weight loss	DIN 52911	< 5%
Tensile Strength	DIN 52910	approx. 10N/㎟ (1,450 psi)
Compressibility	ASTM F36-J	25%
Elastic recovery	ASTM F36-J	35%
Creep relaxation 50 Mpa -300 ℃ (7252 psi – 572℃) The measurement was performed on Cogemica with a pegged steel insert.	DIN 52913	40 N/㎟ (5,800 psi)
Dielectric strength	IEC 243 -23℃	approx. 20kV/㎜ (508 V/mil)
Thermal resistance 2 hr to 800℃	Swelling in thickness	stable
Max temperature range conitinous	Peaks	1000℃(1832℉) 1100℃(2012℉)

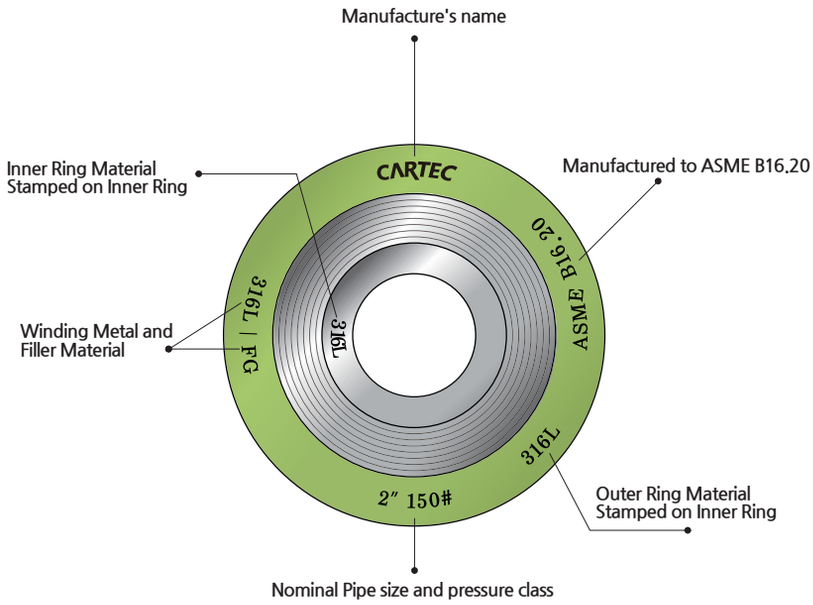
SPIRAL WOUND GASKET

Color Coding & Marking

ASME B 16.20 Marking



D1 - Inside Diameter of Inner Ring
D2 - Inside Diameter of Sealing Element
D3 - Outside Diameter of Sealing Element
D4 - Outside Diameter of Outer Ring



ASME B 16.20 Color Coding

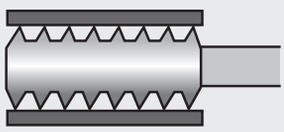
METALLIC WINDING MATERIALS The metallic winding material is designated by a solid color identification around the outside edge of the centering	304SS **Yellow**	316LSS **Green**	317L **Maroon**	321SS **Turquoise**	347SS **Blue**
304LSS **No Color**	309SS **No Color**	430SS **No Color**	Alloy 20 **Black**	Titanium **Purple**	Inconel 600/625 **Gold**
Incoloy 800/825 **White**	Inconel X 750 **No Color**	Hastelloy C276 **Beige**	Hastelloy B2 **Brown**	Nickel 200 **Red**	Carbon Steel **Silver**
Monel **Orange**	**NON METALLIC FILLER** The gasket filler materials are designated by-a number of stripes place at equal intervals around edge of the centering ring,	PTFE **White Stripe**	Graphite **Gray Stripe**	Non-Asbestos **Pink Stripe**	Ceramic **Light Green Stripe**

KAMMPROFILE GASKET

Serrated Metal Gasket

Kammprofile gasket have proven extremely useful in all areas of industry, including the most demanding sealing tasks. Our Kammprofile gaskets can be found in conventional power plants as well as in the primary circuit of nuclear power plants. In nuclear power plants, they are used e.g. as a heat exchanger gasket, as a valve cap gasket or as a manhole cover gasket on steam generators or pressurisers.

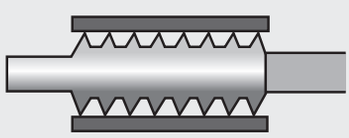
C#KR



Basic Style

Style C#KR is a basic construction Grooved gasket consisting of a serrated metallic core, incorporating soft gasket sealing facings. Style C#KR Grooved are selected for use in confined locations, including male and female, tongue and groove and recessed flange arrangements.

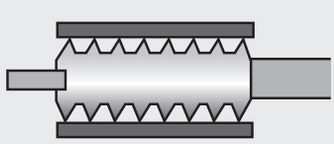
C#KG



With Outer Ring Style

Style C#KG is a variation of Style C#KR , utilizing an integral outer location ring for correct gasket positioning within the flange bolt circle or in a recess. Style C#KG is recommended for use on standard raised face and flat face flange assemblies.

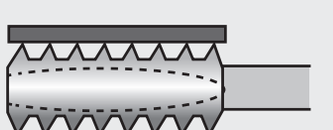
C#KA



With Loose Outer Ring Style

The Style C#KA is a slight variation on the Style C#KG. The integral outer locating ring is replaced by a loose fitting, independent, thinner locating ring. The loose fitting ring allows for expansion and contraction without excessive stress being induced in the solid metal core. Depending on centering ring material and thickness, the C#KAmay be more economical than the C#KG. The Style C#KA is recommended for use on standard flat face and raised face flange assemblies.

C#KRC

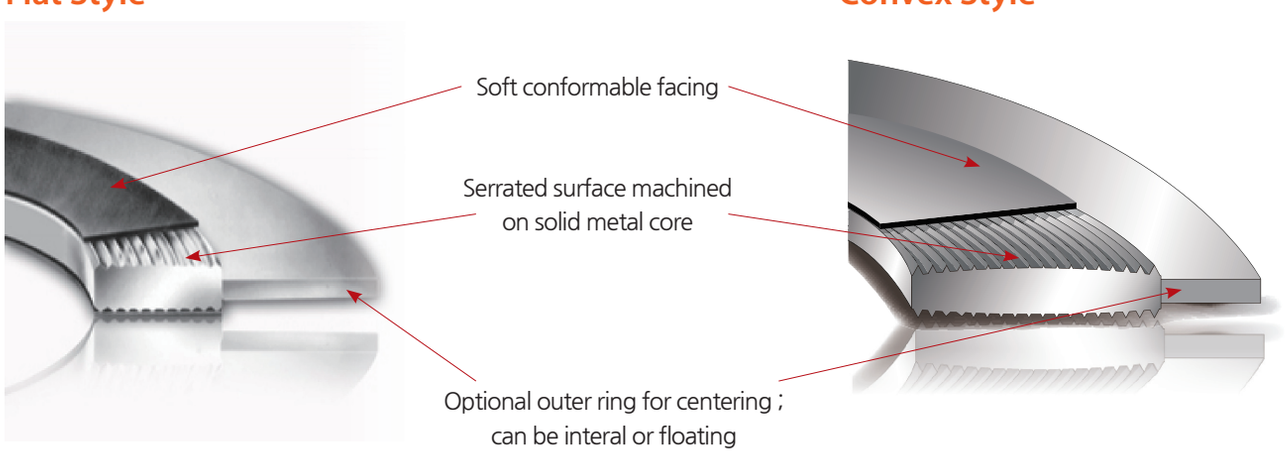


Convex Style

The C#KRC profile is for use with flange connections with tongue and groove and male and female faces. The Profile C#KGC with integrated centring ring should be selected for use with smooth flanges and flanges with raised face. With gaseous media or large differences in temperature between the internal and external diameters, Profile C#KAC with loose sheet metal central edge should be used.

Flat Style

Convex Style

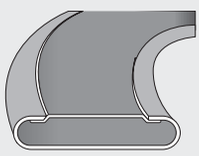


METAL DOUBLE JACKETED GASKET

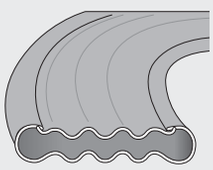
Heat Exchanger Gasket

Metal Jacketed Gaskets, as the name suggests, consist of a metallic outer shell with either a metallic or non-metallic compressed fiber filler. The filler material gives the gasket resilience, while the metal jacket protects the filler and resists pressures, temperatures and corrosion.

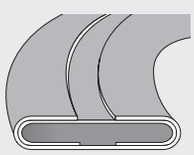
C#D1



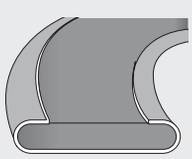
C#D2



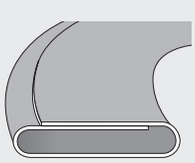
C#D3



C#S1



C#S2



Double Jacketed Gasket (C#D1,C#D2,C#D3)

The filler material is completely enclosed by a two piece metal jacket which covers both the inside and outside diameters and both contact surfaces.
C#D2 is similar to C#D1 with the exception that the metal jacket is formed from a corrugated jacket providing better resilience than the C#D1, since the corrugations form multi-seals across the flange sealing face. C#D3 is a double shell gasket con-structed of two reversed wrap-round shells. This provides handleability and better resistance to high pressures.

When pass partition bars are required, it is sufficient to use a gasket with a welded pass bar construction, as opposed to an integral pass bar construction. Jacketed gaskets standard tolerances:

Jacketed Gaskets Standard Tolerances

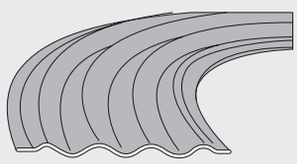
Gasket Outer Diameter	I.D.	O.D.
Up to 6“	+1/32“ / -0	+0 / -1/32“
6“ to 60”	+1/16“ / -0	+0 / -1/16“
Above 60“	+1/8“ / -0	+0 / -1/8“

Single Jacketed Gasket (C#S1,C#S2)

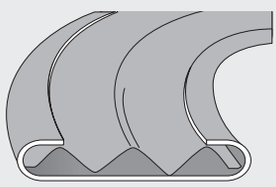
The filler material is enclosed in a metal jacket which covers the inside and outside diameter of the gasket. C#S1 has one of its contact surfaces covered and is ideally suited for comparatively narrow flange widths in circular and non-circular configurations. C#S2 is an overlapped Single Jacketed Gasket, where the filler is completely enclosed on the inside and outside diameters and on both contact surfaces. C#S2 is more suited for high temperature applications of narrow gasket widths. Typical low pressure applica-tions include boilers, compressors, pumps, and gasoline engines. C#S1 is not recommended for standard pipe flanges.

Material of jacket	Code	Temp.	Pressure
Low Carbon Steel	S	530℃	20-60 kgF/㎠ Max.
Stainless Steel	SS304 SS316	530℃ Max.	20-60 kgF/㎠
Copper	CU	400℃	20-60 kgF/㎠
Aluminum	AL	400℃ Max.	20-60 kgF/㎠

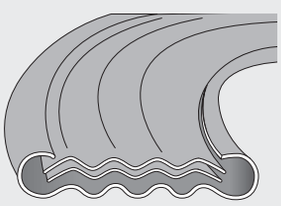
C#C1



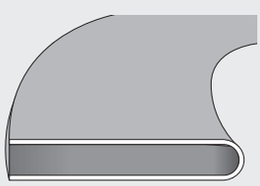
C#C2



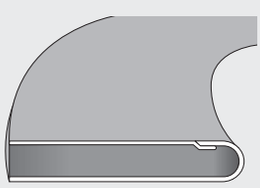
C#C3



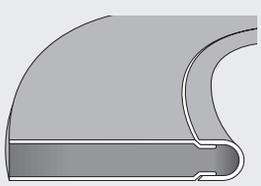
C#F1



C#F2



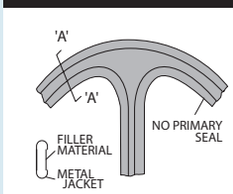
C#F3



Solid Corrugated Metal Gaskets (C#C1,C#C2,C#C3)

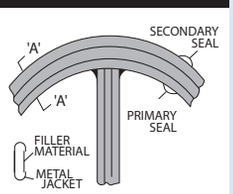
As the name suggests, the solid corrugated metal gasket is comprised solely of metal and dose not contain any non-metallic fillers in its construction.
The temperature limitation of the gasket is therefore only affected by the metal selected. The corrugations provide multi-seals across the face of the gasket.

INEGRAL CONSTRUCTION



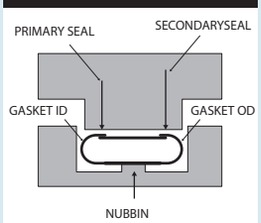
If leakage occurs across the pass partition bar, the fluid will flow along the length of the pass bar arrangements, and then flow to the outer diameter of the gasket being retained only by the secondary seal. The intermediate part of the gasket does very little to effect the sealing capabilities of the gasket.

WELDED CONSTRUCTION



With a welded pass bar arrangement the fluid is retained by the primary seal at the inner diameter of the gasket. Thus the primary seal maintains its function, providing a seal of higher integrity.

DOUBLE JACKETED GASKET



Due to the high bolt loads required to seat metal jacketed gaskets, designers often incorporate stress raising nubbins on the flange sealing face, the principle being that the majority of the applied bolt load is acting on a relatively small proportion of the gasket surface area, thus high surface stresses result. It is essential that the gasket is installed with the smooth side toward the nubbin.

French-Type Gaskets (C#F1,C#F2,C#F3)

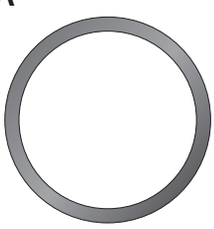
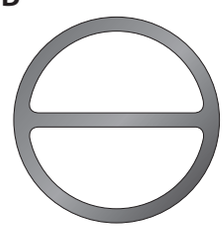
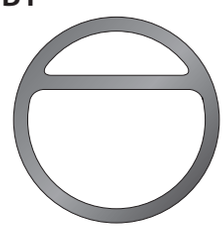
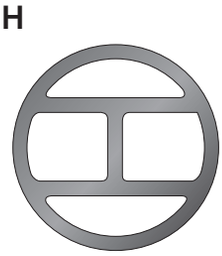
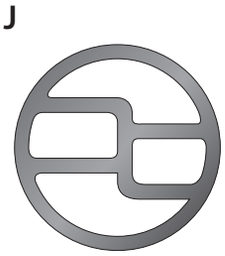
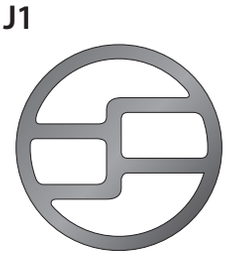
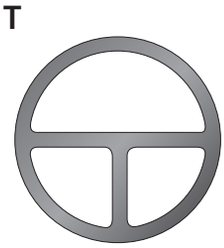
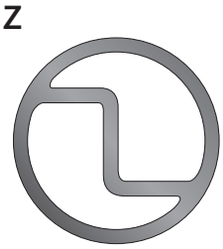
The filler material is enclosed in a metal jacket, which covers the inside diameter of the gasket and completely covers the sealing faces on both sides. Available in three styles which are ideal for both small and large diameters in narrow as well as wide flange widths and in both circular and non-circular configurations. Typical applications include vacuum seals and valve bonnet seals of low pressure. Minimum gasket width 1/4" (6.4mm). Nominal gasket thickness 1/8" (3.2mm).

Material	Minimum		Maximum		Abbreviation
	°F	°C	°F	°C	
Flexible Graphite	-400	-240	900	482	F.G.
Polytetrafluoroethylene	-300	-184	500	260	PTFE
Non-Asbestos	-150	-101	480	249	N.A
Ceramic	-150	-101	2300	1260	CER
Mica	-400	-240	1800	982	Mica

METAL DOUBLE JACKETED GASKET

Schedule of Standard Shapes

Schedule of Standard Shapes for Heat Exchanger Gaskets

A 	B 	B1 	C 	D 
E 	E1 	F 	F1 	G 
H 	J 	J1 	K 	L 
M 	N 	N1 	P 	S 
T 	U 	Y 	Z 	Z1 

Other bar configurations available on request

Tolerance:

The gasket thickness tolerance is (+0.03 in., - 0.000 in.) (+0.8 mm, - 0.0 mm)

(1) For gaskets NPS 1/2 through NPS 24, the outside and inside diameter tolerances are +0.06 in, -0.0 in. (+1.5 mm, - 0.0 mm)

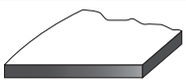
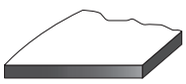
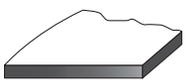
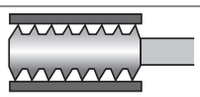
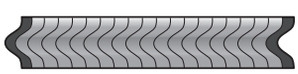
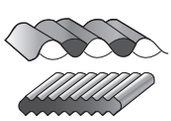
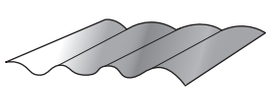
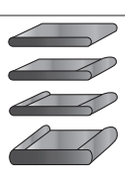
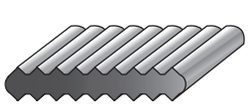
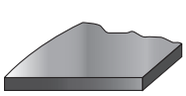
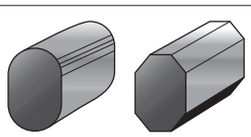
(2) There are no Class 400 flanges for NPS 1/2 through NPS 3 (use Class 600)

(3) There are no Class 900 flanges for NPS 1/2 through NPS 2 1/2 (use Class 1500)

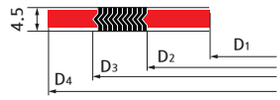
(4) There are no Class 2500 flanges NPS 14 and larger

ASME Boiler and Pressure Vessel Code Calculations.

Gasket factors (m) for operating conditions and minimum design seating stress (y)

Gasket Material		Gasket Factor (m)	Minimum Design Seating Stress(y) (psi)	Sketches and Notes
Self-Energizing Type O-rings, metallic, elastomer, and other gasket types considered as self - sealing		0	0	
Elastomers without fabric Below 75A Shore Durometer 75A or higher Shore Durometer		0.50 1.00	0 200	
Elastomers with cotton fabric insertion		1.25	400	
Vegetable fiber		1.75	1100	
Graphite	NR SR ST	2.00 2.00 2.00	900 900 2,500	
KAMMPROFILE		2.00	2,500	
Spiral wound metal with filler		3.00	10,000	
Spiral wound style Low Stress		3.00	5000	
Corrugated metal with filler or Corrugated metal jacketed with filler	Soft aluminum Soft copper or brass Iron or soft steel Monel or 4%~6% chrome Stainless steels & Nickel based alloys	2.50 2.75 3.00 3.25 3.50	2900 3700 4500 5500 6500	
Corrugated metal	Soft aluminum Soft copper or brass Iron or soft steel Monel or 4%~6% chrome Stainless steels & Nickel based alloys	2.75 3.00 3.25 3.50 3.75	3700 4500 5500 6500 7600	
Flat metal jacketed, with filler	Soft aluminum Soft copper or brass Iron or soft steel Monel 4%~6% chrome Stainless steels & Nickel based alloys	3.25 3.50 3.75 3.50 3.75 3.75	5500 6500 7600 8000 9000 9000	
Grooved metal	Soft aluminum Soft copper or brass Iron or soft steel Monel or 4%~6% chrome Stainless steels & Nickel based alloys	3.25 3.50 3.75 3.75 4.25	5500 6500 7600 9000 10100	
Solid flat metal	Soft aluminum Soft copper or brass Iron or soft steel Monel or 4%~6% chrome Stainless steels & Nickel based alloys	4.00 4.75 5.50 6.00 6.50	8800 13000 18000 21800 26000	
Ring Joint	Iron or soft steel Monel or 4%~6% chrome Stainless steels & Nickel based alloys	5.50 6.00 6.50	18000 21800 26000	

Spiral Wound Gasket DIN FLANGES PN10~PN250

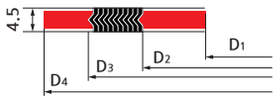


Unit=mm

NOM PIPE SIZE (DN)	ID1	D2	D3		D4							
			PN10-PN40	PN64-PN250	PN10	PN16	PN25	PN40	PN64	PN100	PN160	PN250
10	18	24	36	36	46	46	46	46	56	56	56	67
15	24	30	42	42	51	51	51	51	61	61	61	72
20	27	33	47	47	61	61	61	61	72	72	-	-
25	34	40	54	54	71	71	71	71	82	82	82	83
32	44	50	66	66	82	82	82	82	87	87	-	-
40	51	57	73	73	92	92	92	92	103	103	103	109
50	59	69	87	87	107	107	107	107	113	119	119	124
65	73	83	103	105	127	127	127	127	138	144	144	154
80	87	97	117	121	142	142	142	142	148	154	154	170
100	114	124	144	148	162	162	168	168	174	180	180	202
125	140	150	172	176	192	192	194	194	210	217	217	242
150	168	178	200	204	217	217	224	224	247	257	257	284
175	189	199	225	231	247	247	254	265	277	287	284	316
200	220	230	256	262	272	272	284	290	309	324	324	358
250	269	279	307	315	327	328	340	352	364	391	388	442
300	319	329	357	365	377	383	400	417	424	458	458	538
350	365	375	405	413	437	443	457	474	486	512	-	-
400	416	426	458	466	488	495	514	546	543	572	-	-
500	520	530	566	574	593	617	624	628	657	704	-	-
600	615	630	666	674	695	734	731	747	764	813	-	-
700	715	730	770	778	810	804	833	852	879	-	-	-
800	815	830	874	882	917	911	942	974	988	-	-	-
900	915	930	974	982	1017	1011	1042	1084	1108	-	-	-
1000	1015	1030	1078	1086	1124	1128	1154	1194	1220	-	-	-

Spiral Wound Gasket ASME B16.20 & B16.47 Series B

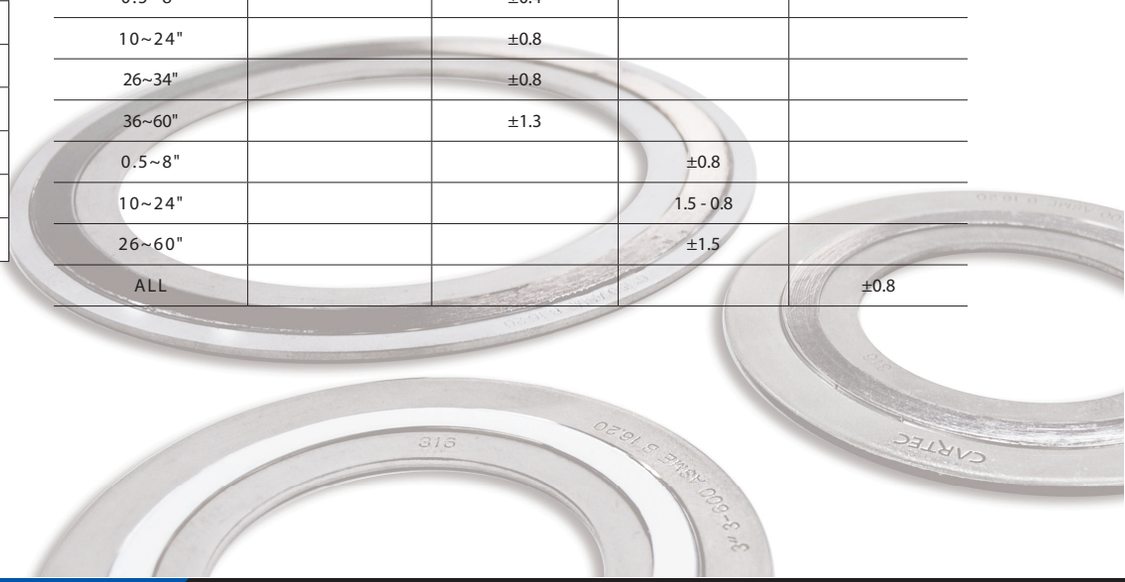
SIZE	#150				#300				#600			
	D1	D2	D3	D4	D1	D2	D3	D4	D1	D2	D3	D4
0.50"	14.2	19.1	31.8	47.8	14.2	19.1	31.8	54.1	14.2	19.1	31.8	54.1
0.75"	20.6	25.4	39.6	57.2	20.6	25.4	39.6	66.8	20.6	25.4	39.6	66.8
1"	26.9	31.8	47.8	66.8	26.9	31.8	47.8	73.2	26.9	31.8	47.8	73.2
1.25"	38.1	47.8	60.5	76.2	38.1	47.8	60.5	82.6	38.1	47.8	60.5	82.6
1.50"	44.5	54.1	69.9	85.9	44.5	54.1	69.9	95.3	44.5	54.1	69.9	95.3
2"	55.6	69.9	85.9	104.9	55.6	69.9	85.9	111.3	55.6	69.9	85.9	111.3
2.50"	66.5	82.6	98.6	124.0	66.5	82.6	98.6	130.3	66.5	82.6	98.6	130.3
3"	81.0	101.6	120.7	136.7	81.0	101.6	120.7	149.4	81.0	101.6	120.7	149.4
4"	106.4	127.0	149.4	174.8	106.4	127.0	149.4	181.1	102.6	120.7	149.4	193.8
5"	131.8	155.7	177.8	196.9	131.8	155.7	177.8	215.9	128.3	147.6	177.8	241.3
6"	157.2	182.6	209.6	222.3	157.2	182.6	209.6	251.0	154.9	174.8	209.6	266.7
8"	215.9	233.4	263.7	279.4	215.9	233.4	263.7	308.1	205.7	225.6	263.7	320.8
10"	268.2	287.3	317.5	339.9	268.2	287.3	317.5	362.0	255.3	274.6	317.5	400.1
12"	317.5	339.9	374.7	409.7	317.5	339.9	374.7	422.4	307.3	327.2	374.7	457.2
14"	349.3	371.6	406.4	450.9	349.3	371.6	406.4	485.9	342.9	362.0	406.4	492.3
16"	400.1	422.4	463.6	514.4	400.1	422.4	463.6	539.8	389.9	412.8	463.6	565.2
18"	449.3	474.7	527.1	549.4	449.3	474.7	527.1	596.9	438.2	469.9	527.1	612.9
20"	500.1	525.5	577.9	606.6	500.1	525.5	577.9	654.1	489.0	520.7	577.9	682.8
24"	603.3	628.7	685.8	717.6	603.3	628.7	685.8	774.7	590.6	628.7	685.8	790.7
26"(B)	654.1	673.1	698.5	725.4	654.1	673.1	711.2	771.7	644.7	663.7	714.5	765.3
28"(B)	704.9	723.9	749.3	776.2	704.9	723.9	762.0	825.5	685.8	704.9	755.7	819.2
30"(B)	755.7	774.7	800.1	827.0	755.7	774.7	812.8	886.0	752.6	778.0	828.8	879.6
32"(B)	806.5	825.5	850.9	881.1	806.5	825.5	863.6	939.8	793.8	831.9	882.7	933.5
34"(B)	857.3	876.3	908.1	935.0	857.3	876.3	914.4	993.9	850.9	889.0	939.8	997.0
36"(B)	908.1	927.1	958.9	987.6	908.1	927.1	965.2	1047.8	901.7	939.8	990.6	1047.8
38"(B)	958.9	974.6	1009.7	1044.7	971.6	1009.7	1047.8	1098.6	952.5	990.6	1041.4	1104.9
40"(B)	1009.7	1022.4	1063.8	1095.5	1022.4	1060.5	1098.6	1149.4	1009.7	1047.8	1098.6	1155.7
42"(B)	1060.5	1079.5	1114.6	1146.3	1085.9	1111.3	1149.4	1200.2	1066.8	1104.9	1155.7	1219.2
44"(B)	1111.3	1124.0	1165.4	1197.1	1124.0	1162.1	1200.2	1251.0	1111.3	1162.1	1212.9	1270.0
46"(B)	1162.1	1181.1	1224.0	1255.8	1178.1	1216.2	1254.3	1317.8	1162.1	1212.9	1263.7	1327.2
48"(B)	1212.9	1231.9	1270.0	1306.6	1231.9	1263.7	1311.4	1368.6	1219.2	1270.0	1320.8	1390.7
50"(B)	1263.7	1282.7	1325.6	1357.4	1267.0	1317.8	1355.9	1419.4	1270.0	1320.8	1371.6	1447.8
52"(B)	1314.5	1333.5	1376.4	1408.2	1317.8	1368.6	1406.7	1470.2	1320.8	1371.6	1422.4	1498.6
54"(B)	1365.3	1384.3	1422.4	1463.8	1365.3	1403.4	1454.2	1530.4	1378.0	1428.8	1479.6	1555.8
56"(B)	1422.4	1444.8	1477.8	1514.6	1428.8	1479.6	1524.0	1593.9	1428.8	1479.6	1530.4	1612.9
58"(B)	1478.0	1500.1	1528.8	1579.6	1484.4	1535.2	1573.3	1655.8	1473.2	1536.7	1587.5	1663.7
60"(B)	1535.2	1557.3	1586.0	1630.4	1557.3	1589.0	1630.4	1706.6	1530.4	1593.9	1644.7	1733.6



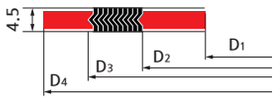
Unit=mm

	#900				#1500				#2500			
	D1	D2	D3	D4	D1	D2	D3	D4	D1	D2	D3	D4
	14.2	19.1	31.8	63.5	14.2	19.1	31.8	63.5	14.2	19.1	31.8	69.9
	20.6	25.4	39.6	69.9	20.6	25.4	39.6	69.9	20.6	25.4	39.6	76.2
	26.9	31.8	47.8	79.5	26.9	31.8	47.8	79.5	26.9	31.8	47.8	85.9
	33.3	39.6	60.5	88.9	33.3	39.6	60.5	88.9	33.3	39.6	60.5	104.9
	41.4	47.8	69.9	98.6	41.4	47.8	69.9	98.6	41.4	47.8	69.9	117.6
	52.3	58.7	85.9	143.0	52.3	58.7	85.9	143.0	52.3	58.7	85.9	146.1
	63.5	69.9	98.6	165.1	63.5	69.9	98.6	165.1	63.5	69.9	98.6	168.4
	78.7	95.3	120.7	168.4	78.7	92.2	120.7	174.8	78.7	92.2	120.7	196.9
	102.6	120.7	149.4	206.5	97.8	117.6	149.4	209.6	97.8	117.6	149.4	235.0
	128.3	147.6	177.8	247.7	124.5	143.0	177.8	254.0	124.5	143.0	177.8	279.4
	154.9	174.8	209.6	289.1	147.3	171.5	209.6	282.7	147.3	171.5	209.6	317.5
	196.9	222.3	257.3	358.9	196.9	215.9	257.3	352.6	196.9	215.9	257.3	387.4
	246.1	276.4	311.2	435.1	246.1	266.7	311.2	435.1	246.1	270.0	311.2	476.3
	292.1	323.9	368.3	498.6	292.1	323.9	368.3	520.7	292.1	317.5	368.3	549.4
	320.8	355.6	400.1	520.7	320.8	362.0	400.1	577.9				
	374.7	412.8	457.2	574.8	368.3	406.4	457.2	641.4				
	425.5	463.6	520.7	638.3	425.5	463.6	520.7	704.9				
	482.6	520.7	571.5	698.5	476.3	514.4	571.5	755.7				
	590.6	628.7	679.5	838.2	577.9	616.0	679.5	901.7				
	666.8	692.2	749.3	838.2								
	717.6	743.0	800.1	901.7								
	781.1	806.5	857.3	958.9								
	838.2	863.6	914.4	1016.0								
	895.4	920.8	971.6	1073.2								
	920.8	946.2	997.0	1124.0								
	1009.7	1035.1	1085.9	1200.2								
	1060.5	1098.6	1149.4	1251.0								
	1111.3	1149.4	1200.2	1301.8								
	1155.7	1206.5	1257.3	1368.6								
	1219.2	1270.0	1320.8	1435.1								
	1270.0	1320.8	1371.6	1485.9								

Tolerance	D1	D2	D3	D4
0.5~3"	±0.8			
4~24"	±1.5			
26~60"	±3			
0.5~8"		±0.4		
10~24"		±0.8		
26~34"		±0.8		
36~60"		±1.3		
0.5~8"			±0.8	
10~24"			1.5 - 0.8	
26~60"			±1.5	
ALL				±0.8



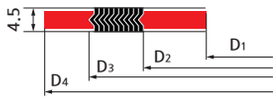
Spiral Wound Gasket ASME B16.20 & B16.47 Series A



Unit=mm

SIZE	#150				#300				#600				#900			
	D1	D2	D3	D4	D1	D2	D3	D4	D1	D2	D3	D4	D1	D2	D3	D4
22"(A)	552.5	577.8	609.6	660.4	552.5	577.8	628.6	704.8	552.5	577.8	628.6	733.4	-	-	-	-
26"(A)	654.1	673.1	704.9	774.7	654.1	685.8	736.6	835.2	647.7	685.8	736.6	866.9	660.4	685.8	736.6	882.7
28"(A)	704.9	723.9	755.7	831.9	704.9	736.6	787.4	898.7	698.5	736.6	787.4	914.4	711.2	736.6	787.4	946.2
30"(A)	755.7	774.7	806.5	882.7	755.7	793.8	844.6	952.5	755.7	793.8	844.6	971.6	768.4	793.8	844.6	1009.7
32"(A)	806.5	825.5	860.6	939.8	806.5	850.9	901.7	1006.6	812.8	850.9	901.7	1022.4	812.8	850.9	901.7	1073.2
34"(A)	857.3	876.3	911.4	990.6	857.3	901.7	952.5	1057.4	863.6	901.7	952.5	1073.2	863.6	901.7	952.5	1136.7
36"(A)	908.1	927.1	968.5	1047.8	908.1	955.8	1006.6	1117.6	917.7	955.8	1006.6	1130.3	920.8	958.9	1009.7	1200.2
38"(A)	958.9	977.9	1019.3	1111.3	952.5	977.9	1016.0	1054.1	952.5	990.6	1041.4	1104.9	1009.7	1035.1	1085.9	1200.2
40"(A)	1009.7	1028.7	1070.1	1162.1	1003.3	1022.4	1070.1	1114.6	1009.7	1047.8	1098.6	1155.7	1060.5	1098.6	1149.4	1251.0
42"(A)	1060.5	1079.5	1124.0	1219.2	1054.1	1073.2	1120.9	1165.4	1066.8	1104.9	1155.7	1219.2	1111.3	1149.4	1200.2	1301.8
44"(A)	1111.3	1130.3	1178.1	1276.4	1104.9	1130.3	1181.1	1219.2	1111.3	1162.1	1212.9	1270.0	1155.7	1206.5	1257.3	1368.6
46"(A)	1162.1	1181.1	1228.9	1327.2	1152.7	1178.1	1228.9	1273.3	1162.1	1212.9	1263.7	1327.2	1219.2	1270.0	1320.8	1435.1
48"(A)	1212.9	1231.9	1279.7	1384.3	1209.8	1235.2	1286.0	1324.1	1219.2	1270.0	1320.8	1390.7	1270.0	1320.8	1371.6	1485.9
50"(A)	1263.7	1282.7	1333.5	1435.1	1244.6	1295.4	1346.2	1378.0	1270.0	1320.8	1371.6	1447.8	-	-	-	-
52"(A)	1314.5	1333.5	1384.3	1492.3	1320.8	1346.2	1397.0	1428.8	1320.8	1371.6	1422.4	1498.6	-	-	-	-
54"(A)	1358.9	1384.3	1435.1	1549.4	1352.6	1403.4	1454.2	1492.3	1378.0	1428.8	1479.6	1555.8	-	-	-	-
56"(A)	1409.7	1435.1	1485.9	1606.6	1403.4	1454.2	1505.0	1543.1	1428.8	1479.6	1530.4	1612.9	-	-	-	-
58"(A)	1460.5	1485.9	1536.7	1663.7	1477.8	1511.3	1562.1	1593.9	1473.2	1536.7	1587.5	1663.7	-	-	-	-
60"(A)	1511.3	1536.7	1587.5	1714.5	1524.0	1562.1	1612.9	1644.7	1530.4	1593.9	1644.7	1733.6				

Spiral Wound Gasket JIS FLANGE

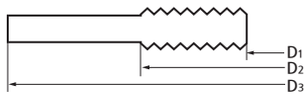


Unit=mm

SIZE	ANSI	10kgf/㎠				16kgf/㎠				20kgf/㎠				30kgf/㎠				40kgf/㎠				63kgf/㎠			
		D1	D2	D3	D4	D1	D2	D3	D4	D1	D2	D3	D4	D1	D2	D3	D4	D1	D2	D3	D4	D1	D2	D3	D4
10A	3/8"	18	24	37	52	18	24	37	52	18	24	37	52	18	24	37	59	15	21	34	59	15	21	34	64
15A	1/2"	22	28	41	57	22	28	41	57	22	28	41	57	22	28	41	64	18	24	37	64	18	24	37	69
20A	3/4"	28	34	47	62	28	34	47	62	28	34	47	62	28	34	47	69	23	29	42	69	23	29	42	75
25A	1"	34	40	53	74	34	40	53	74	34	40	53	74	34	40	53	79	29	35	48	79	29	35	48	80
32A	1-1/4"	43	51	67	84	43	51	67	84	43	51	67	84	43	51	67	89	38	44	60	89	38	44	60	90
40A	1-1/2"	49	57	73	89	49	57	73	89	49	57	73	89	49	57	73	100	43	51	67	100	43	51	67	107
50A	2"	61	69	89	104	61	69	89	104	61	69	89	104	61	69	89	114	55	63	79	114	55	63	79	125
65A	2-1/2"	77	87	107	124	77	87	107	124	77	87	107	124	68	78	98	140	68	78	98	140	68	78	98	152
80A	3"	89	98	118	134	89	99	119	140	89	99	119	140	80	90	110	150	80	90	110	150	80	90	110	162
90A	3-1/2"	102	110	130	144	102	114	139	150	102	114	139	150	92	102	127	162	92	102	127	162	92	102	127	179
100A	4"	115	123	143	159	115	127	152	165	115	127	152	165	104	116	141	172	104	116	141	182	104	116	141	194
125A	5"	140	148	173	190	140	152	177	202	140	152	177	202	128	140	165	207	128	140	165	224	128	140	165	235
150A	6"	166	174	199	220	166	182	214	237	166	182	214	237	153	165	197	249	153	165	197	265	153	165	197	275
200A	8"	217	227	252	270	217	233	265	282	217	233	265	282	202	218	250	294	202	218	250	315	202	218	250	328
250A	10"	268	278	310	332	268	288	328	354	268	288	328	354	251	271	311	360	251	271	311	378	251	271	311	394
300A	12"	319	329	361	377	319	339	379	404	319	339	379	404	300	320	360	418	300	320	360	434	300	320	360	446
350A	14"	356	366	406	422	356	376	416	450	356	376	416	450	336	356	396	463	366	356	396	479	336	356	396	488
400A	16"	407	417	457	484	407	432	482	508	407	432	482	508	383	403	453	524	383	403	453	531	383	403	453	545
450A	18"	458	468	518	539	458	483	533	573	458	483	533	573												
500A	20"	508	518	568	594	508	533	583	628	508	533	583	628												
550A	22"	559	569	619	650	559	584	634	684	559	584	634	684												
600A	24"	610	620	670	700	610	635	685	734	610	635	685	734												

Tolerance	D2 & D3	D1 & D4	T
10~250A	±0.5	±0.8	
300~630A	±0.8		
650~1600A	±1.3		
1700A~	±2.0	±1.3	

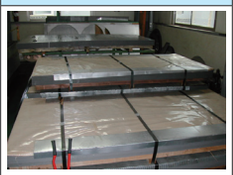
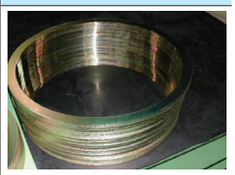
KAMMPROFILE GASKET Dimensions ASME B16.5 (C#KG, C#KA)

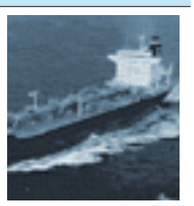


Unit=mm

SIZE	D1	D2	Pressure Class						
			150	300	400	600	900	1500	2500
			D3						
0.50	23.02	33.34	47.63	53.98	53.98	53.98	63.50	63.50	63.50
0.75	28.58	39.69	57.15	66.68	66.68	66.68	69.85	69.85	69.85
1.00	36.53	47.63	66.68	73.03	73.03	73.03	79.38	79.38	79.38
1.25	44.45	60.33	76.20	82.55	82.55	82.55	88.90	88.90	88.90
1.50	52.40	69.85	85.85	95.25	95.25	95.25	98.43	98.43	98.43
2.00	69.85	88.90	104.78	111.13	111.13	111.13	142.88	142.88	142.88
2.50	82.55	101.60	123.83	130.18	130.18	130.18	165.10	165.10	146.05
3.00	98.43	123.83	136.65	149.23	149.23	149.23	168.28	174.63	168.28
3.50	111.13	136.53	162.05	165.10	161.93	161.93	190.50	187.33	196.85
4.00	123.83	153.99	174.63	180.98	177.80	193.68	206.38	209.55	-
5.00	150.81	182.56	196.85	215.90	212.85	241.30	247.65	254.00	234.95
6.00	177.80	212.73	222.25	250.83	247.65	266.70	288.93	282.58	279.40
8.00	228.60	266.70	279.40	307.98	304.80	320.68	358.78	352.43	317.50
10.00	282.58	320.68	339.85	361.95	358.78	400.05	434.98	434.98	387.35
12.00	339.73	377.83	409.58	422.28	419.10	457.20	498.48	520.70	476.25
14.00	371.48	409.58	450.85	485.78	482.60	492.13	520.70	577.85	549.28
16.00	422.28	466.73	514.35	539.75	536.58	565.15	574.68	641.35	-
18.00	479.43	530.23	549.28	596.90	593.73	612.78	638.18	704.85	-
20.00	530.23	581.15	606.43	654.05	647.70	682.63	698.50	755.65	-
22.00	581.03	631.95	660.40	704.85	701.68	733.43	-	-	-
24.00	631.83	682.75	717.55	774.70	768.35	790.58	838.20	901.70	-

Spiral Wound Gasket Process Flow Chart

	1	2	3	4	5
PROCESS					
	RAW MATERIAL INCOMING (STEEL PLATE /HOOP)	**LASER CUTTING PRESS**	**GROOVE MACHINING**	**MARKING**	**PLAITING or POWDER PAINT COATING**
MACHINE		LASER CUTTING M/C PRESS	CNC LATHE UNIVERSAL LATHE	PRESS	SUBSIDARY
CONTROL CHARACTER	1.MILL SHEET 2.MATERIAL COLOR CODING 3.INSPECTION (PLATE THKICKNESS)	INSIDE DIAMETER OUTSIDE DIAMETER ASME B16.20	1.GROOVE DEPTH (1.27 ±0.13mm) 2.GROOVE ANGLE (45'±1') QCP-101	1.LETTER HEIGHT 2.LETTER DEPTH ASME B16.20	THICKNESS OF COATING QCP-101

	6	7	8	9	10	11
PROCESS						
	COLOR CODING	**WINDING**	**ASSEMBLE**	**INSPECTION & TEST**	**PACKING**	**SHIPMENT**
MACHINE	CODING ROOM COLOR CODING FOR MATERIAL	WINDING MACHINE	PRODUCTION SECTION 4	QC		
CONTROL CHARACTER	STRIPE 11/2"↓ 2POINT 2" ↑ 4POINT ASME B16.20 (CLAUSE 3.4.3)	1.WIRE THK 2.WELDING DISTANCE 3.BURN THROUGH ASME B16.20 (CLAUSE 3.2.3)	PS-007	VISUAL DIMENSION COMPRESSOR TEST ASME B16.20 (CLAUSE 3.2.6)	BUNDLE Q'ty DEPEND ON CUSTOMER	CONTAINER or BULK

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