

Spiral Wound Metallic Gaskets

SPIRAL WOUND METALLIC GASKETS:

Throughout the world the oil, gas, petroleum and chemical processing industries operate in environments where only the strongest survive. The precision engineering of materials and their supply, wherever and whenever they are required, is fundamental in order to gain the trust of operators in these most demanding technologies. Our aim is to supply quality products and services and to fulfill our customers' expectations. This is underpinned by our Quality System approvals to ISO 9001: 2015, EIL Approval which are supplemented by many companies and independent authority approvals. In order to support environmental protection and prevention of pollution in balance with socio- economic needs the organization is approved to ISO 14001: 2015 Standards. The Organization has acquired OHSAS 18001: 2007 Standards as it is concerned with achieving and demonstrating sound Occupational Health and Safety Performance by controlling their OH&S risks in order to support and promote good OH&S practices in balance with socio- economic needs. We take great pride in having achieved universal acceptance for providing gaskets used in sealing applications where extreme mechanical and thermal performance demands are considered routine. There are many companies in the sealing industry. Very few can boast the quality of products, quality of service and quality of people found at Champion Jointings Pvt. Ltd.

Description:

These Gaskets are certified for emission control applications. Spitmaan Gaskets will seal flanges where temperature, pressure, vibration or flow rates are beyond the capability of conventional jointing materials.

They are wound in V- section metal strip and a softer filler material so that flange faces are presented with a spiral of alternate metal/ filler layers.

Spiral Wound Gasket Principle:

The spiral wound gasket function is based on the metal strip winding / filler relationship and the flange surfaces. Flange surface roughness should be approximately Ra 3.2 um. Spiral wound gaskets can be used with flanges having a larger surface roughness, but the bolt loads should be increased to ensure proper function of the gasket.

As the gasket is compressed during mounting, the soft filler material "flows" into the irregularities of the flange faces. The metal strip winding with the filler material ensures the strength and elasticity of the gasket. If the gasket has a PTFE filler it must have an inner ring since PTFE permits no further compression. The inner ring shall prevent the gasket from springing open and penetration of the flowing PTFE into the pipeline. The larger the surface roughness on the flange face, the larger the surface load required permitting a flow of the PTFE.

Typical applications:

Applications include Oil Refineries, Chemical, Petrochemical, Marine, Power Plants, Pulp, Pipelines, Pressure vessels on steam, metallurgical, nuclear, and hydraulic plants including heat exchangers. Spitmaan gaskets are recommended for flange joints where bolt loading is limited.

Prime Features:

- Gaskets are made to a wide variety of sizes and shapes.
- Combinations of metal winding strip and filler are selected to suit the fluid media and other operating conditions.
- Quick to install and remove.
- Operate at temperatures from cryogenic upto 650 ° C. (Can be increased for specific applications)
- System pressures from high vacuum to over 2500 psi. (Can be increased for specific applications)
- Support rings, inside and/ or outside of spiral winding, make gasket suitable for high line pressure on flat or raised flange faces.

Specification Compliances:

Spitmaan gaskets with graphite and PTFE fillers meet emission control requirements.

Gaskets are manufactured in accordance with all relevant gasket standards to suit flange designations:

ASME B 16.20a: 1994, ASME B 16.5, ASME B16.5 Series A (MSS- SP 44), ASME B16.5 Series B (ASME B16.47 supersedes API 605), IS 7719: 2013, DIN & JIS.

SPIRAL WOUND GASKET SPECIFICATIONS:

TEMPERATURE LIMITS FOR COMMON METALS:

Material	Minimum		Maximum		Abbreviations
	°F	°C	°F	°C	
304 Stainless Steel	-320	-195	1400	760	304
304 L Stainless Steel	-150	-100	1400	760	304 L
316 Stainless Steel	-150	-100	1400	760	316
316 L Stainless Steel	-150	-100	1400	760	316 L
321	-320	-195	1400	760	321
Monel	-200	-130	1500	820	MON

TEMPERATURE LIMITS FOR FILLER MATERIALS:

Material	Minimum		Maximum		Abbreviations
	°F	°C	°F	°C	
Flexible Graphite	-350	-212	850	550	F. G.
PTFE	-400	-240	500	260	PTFE
Asbestos	--	--	842	450	ASB
Ceramic	-350	-212	2000	1090	CER.

Guide Ring Material

As Standard	Carbon Steel	CS
Others	Stainless Steel	SS (304, 316 & 321)
	Monel	MON

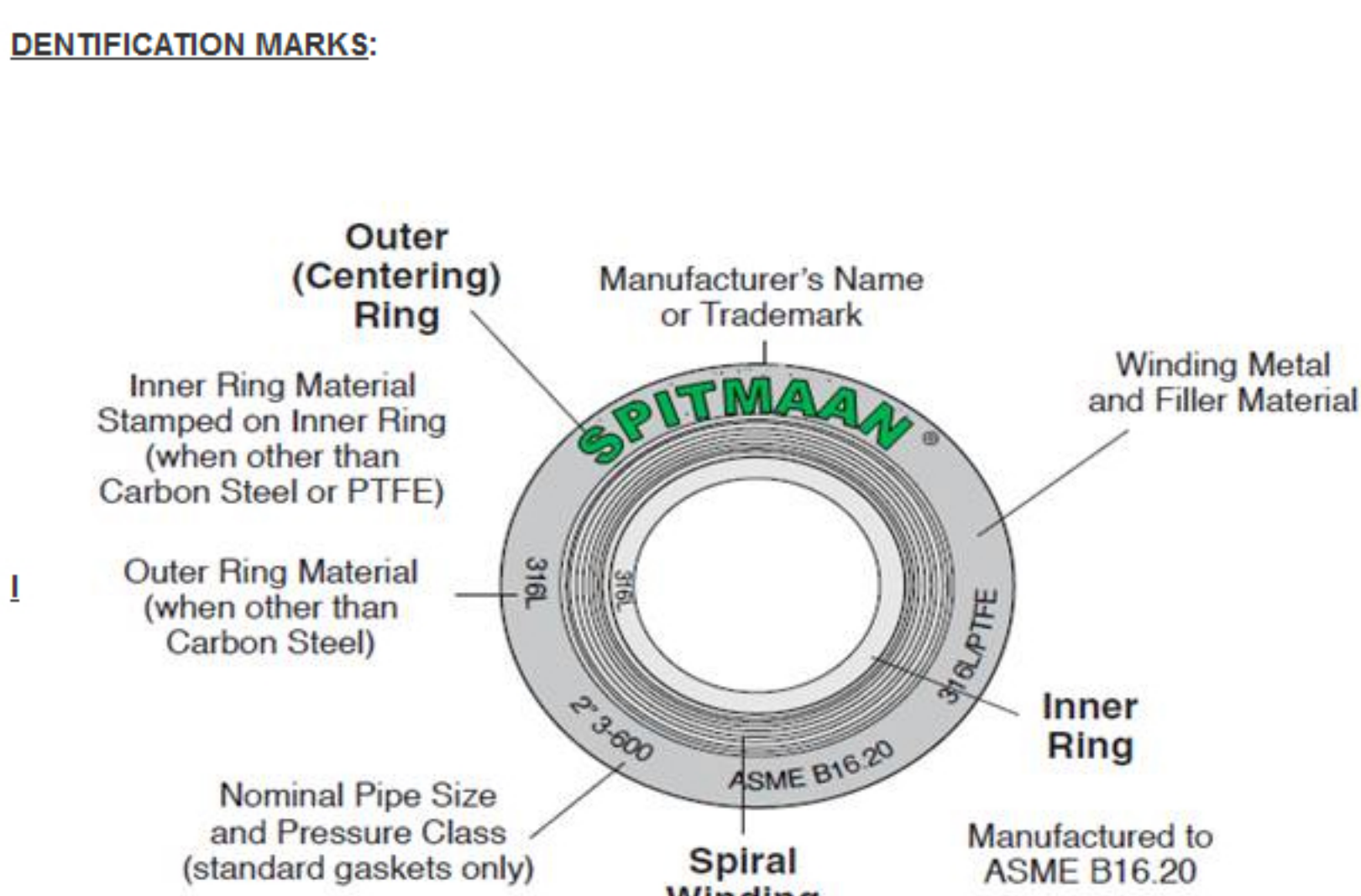
COLOUR CODING AND ABBREVIATIONS FOR CGI:

Material	Flexible Graphite	Polytetrafluoroethylene	Asbestos	Ceramic
Abbreviations	F. G.	PTFE	ASB	CER
Colour Code	Gray Stripe	White Stripe	No Stripe	Light Green Stripe

GASKET FACTORS:

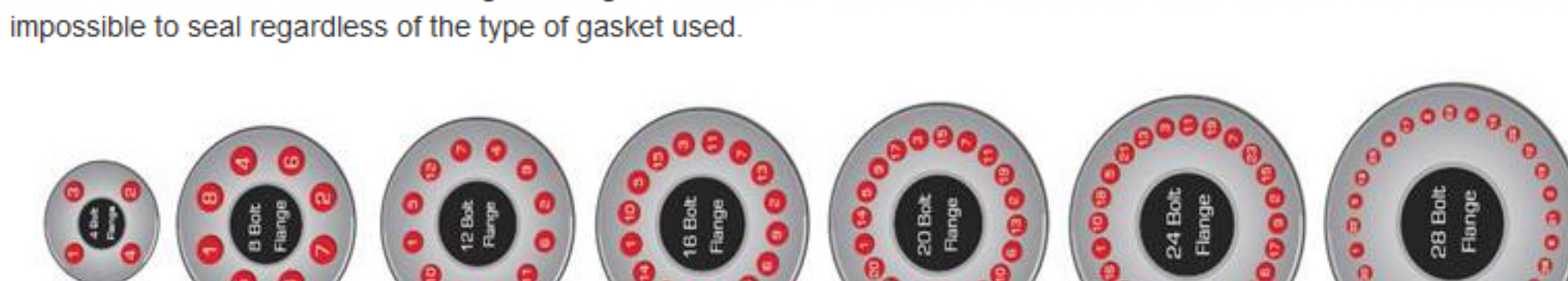
Gasket Style & Material	Gasket Factor M	Gasket Factor Y (psi)
SPITMAAN Spiral Wound Gasket	3.00	10000

IDENTIFICATION MARKS:



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.



Required Gasket Compression for Spiral Wound Gaskets Spiral Wound Gaskets with internal or external rings, i.e. Styles 'CG' and 'CGI' can be compressed to the ring thickness, if necessary. This will not damage the gasket or affect the sealing performance and the ring is provided as a compression limiting stop.

Hints of Installation and Maintenance:

When installing a Spiral Wound Gasket, check the

dimensions of the Gaskets for use between pipe and pressure vessel flanges. The procedure is as follows

Measure ID of flange contact face.

Measure Gasket ID. If Gasket ID is not 1/8" larger than flange ID, do not use it unless it can be installed perfectly centered.

A Spiral Wound Gasket does not have the same feel as other Metallic or Non-Metallic Gaskets during the bolting-up. It's different because it gives a little bit under each bolt as it is tightened. It is therefore important to tighten the bolts in small steps in proper sequence as shown hereunder. Final tightening must be uniform with each bolt pulling same load. This will guarantee a trouble free joint. If not uniform, the joint may leak-particularly after it has been in hot service. Tighten the bolts after 24 hours and again a week later.

Gasket Selection:

Ensure that the correct style of gasket has been selected for the appropriate application.

Spiral Wound Gaskets are one of the best all-around seals which offer a low-cost solution that has the ability to handle temperature and pressure fluctuations. Multiple plies of metal and filler in the spiral form create a barrier that reduces the possibility of leaks.

Be certain that the gasket you order is as resistant as possible to the media, the temperature application and the working pressure involved. Check the chemical compatibility of the metal as well as the filler material for the media to be sealed. As a general rule, the Inner Ring and the metal used in the spiral winding should be similar to the flange material. The compressibility of flexible graphite makes it an excellent filler material for metallic gaskets. Flexible graphite may be used in services with temperatures up to 1200 °F (650 °C), though it should not be used with strong oxidizers such as nitric or sulphuric acid. PTFE filler material provides excellent chemical resistance at temperatures below 500 °F (260 °C). In accordance with ASME B16.20, an inner ring is required when using Conventional PTFE filler materials, in order to protect the winding from radial buckling.

Manufactured in Accordance with ASME B16.20:

Spiral wound gaskets— made with an alternating combination of preformed metal and soft filler materials which form a very effective seal when compressed between two flanges. A v-shaped crown centered in the metal strip acts as a spring, giving gaskets greater resiliency under varying conditions. Filler and wire material can be changed to accommodate different chemical compatibility requirements. Fire safety can be assured by choosing flexible graphite as the filler material. If the load available to compress a gasket is limited, gasket construction and dimensions can be altered to provide an effective seal. A spiral wound gasket may include a centering ring, an inner ring or both. The outer centering ring centers the gasket within the flange and acts as a compression limiter, while the inner ring provides additional radial strength. The inner ring also reduces flange erosion and protects the sealing element. Resiliency and strength make spiral wound gaskets an ideal choice under a variety of conditions and applications. Widely used throughout refineries and chemical processing plants, spiral wound gaskets are also effective for power generation, pulp and paper, aerospace, and a variety of valves and specialty applications.

As set forth in ASME B16.20, all PTFE filled spiral wound gaskets will be supplied with inner rings. In addition, the following higher pressure class spirals will be supplied with inner rings for all filler material:

Nominal Pipe Size	Pressure Rating
NPS 4" and above	25 Mpa
NPS 12" and above	10 Mpa
NPS 24" and above	6 Mpa
NPS 26" to 60"	All

Starting in May 2008, the metricated edition of this standard recommends the use of inner rings for all graphite filled spiral wound gaskets. However, these gaskets may be specified without inner rings by the purchaser. Both styles will still be stamped ASME B16.20 compliant on the outer guide ring.

Style Spiral Wound:

Suitable for tongue and groove, male-female, or groove-to-flat face flanges. Spiral winding only contains preformed metal and soft filler material. Available with Centering (Outer) and Inner Rings. However, these gaskets are also supplied without rings on special request by customers especially in case of 3.20 mm thickness.

Flange Inspection:

Ensure flange faces are clean and free from imperfections which could be detrimental to the sealing performance. The flange faces shall be in a good condition and with a turned surface finish within the following range Ra 3.2 to 6.3 micrometres (125 to 250 micro inches).

Strips:

Width and thickness of the metallic strips will be as per the following table:

(Table 1)

Sr. No.	Thickness of gasket	Width of S.S. Strip	Thickness Range of S. S.Strips
1	3.2 mm	4.32 to 4.40 mm	0.152 to 0.28 mm
2	4.5 mm	5.33 to 5.40 mm	0.15 to 0.28 mm

Filler:

The filler material thickness shall be 0.304 to 0.812 mm and should flush with but not below the contact faces of the gasket.

DIMENSIONS & TOLERANCES:

In respect of gaskets with 3.2mm thickness, the Dimensional Specifications are as per Customers requirements.

In respect of gaskets of 4.5mm thickness, the Dimensional Specifications are followed as per Table No. 1, unless otherwise specified by the customer.

Tolerances for Centering Ring & Sealing Element:

(Table No. 2)

Sr. No.	Dimensions	Centering Ring	Sealing Element
1	O.D.	For NPS 1/2" to 24" → ± 0.00– 0.762 mm. For NPS 1/2" to 25" to 60" → ± 0.00– 0.762 mm.	For NPS 1/2" to 8" → ± 0.80 mm. For NPS 10" to 24" → ± 1.50– 0.80 mm For 25" to 60" → ± 1.50 mm
2	I.D.	--	For NPS 1/2" to 8" → ± 0.4 mm For NPS 10" to 24" → ± 0.80 mm For NPS 25" to 34" → ± 1.20 mm For NPS 35" to 60" → ± 1.50 mm
3	Thickness	2.971 to 3.327 mm	4.455 ± 0.127 mm

For Raised Face, Slip-on and Welding Neck Joints (Flanges)

7/40" (4.50 mm) Thick Gaskets 1/8"(3.2 mm) Thick Centering Ring.

(Table No. 3)

Nominal Pipe Size (Inch)	Gasket O.D. mm	Pressure Classes													
		150 lb		300 lb		400 lb		600lb		900 lb		1500lb		2500lb	
		All the Figures below are in mm													
		Gasket I.D.	Ring O.D.	Gasket I.D.	Ring O.D.	Gasket I.D.	Ring O.D.	Gasket I.D.	Ring O.D.	Gasket I.D.	Ring O.D.	Gasket I.D.	Ring O.D.	Gasket I.D.	Ring O.D.
34 ²	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 ²	927.1	968.5	1047.8	958.9	1009.7	1117.6	958.9	1009.7	1117.6	958.9	1009.7	1130.3	958.9	1009.7	1200.2
38 ²	977.9	1019.3	1111.3	977.9	1016.0	1054.1	971.6	1022.1	1073.2	990.6	1041.4	1104.9	1035.1	1085.8	1200.2
40 ²	1028.7	1070.1	1162.1	1022.4	1070.1	1114.6	1025.7	1076.5	1127.3	1047.8	1098.6	1155.7	1096.6	1149.4	1251.0
42 ²	1079.5	1124.0	1219.2	1073.2	1120.2	1165.4	1076.5	1127.3	1178.1	1104.9	1155.7	1219.2	1149.4	1200.2	1301.8
44 ²	1130.3	1175.1	1276.4	1130.3	1181.1	1219.2	1130.3	1181.1	1231.9	1162.5	1212.9	1270.0	1206.5	1257.3	1368.6
46 ²	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 ²	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 ²	1282.7	1333.5	1435.1	1295.4	1346.2	1376.0	1295.4	1346.2	1403.4	1320.8	1371.6	1447.8	--	--	--
52 ²	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 ²	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 ²	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 ²	1485.9	1536.7	1663.7	1511.3	1562.1	1603.8	1505.0	1555.8	1619.3	1536.7	1587.5	1663.7	--	--	--
60 ²	1536.7	1587.5	1714.5	1562.1	1612.9	1644.7	1568.5	1619.3	1628.8	1593.9	1644.7	1733.6	--	--	--

Centering Ring: If specified by the customer the gaskets shall be furnished assembled into a Centering Ring suitably grooved on the inside diameter so as to retain the gasket. The centering ring thickness shall be 2.971 mm to 3.327 mm. Outside diameter tolerance should be ± 0.762 mm.

Inner Ring: If specified by the customer the gasket shall be furnished assembled in an Inner ring. The Inner Ring thickness shall be between 2.971 mm to 3.327 mm and suitably rigged on an outer diameter so as to protrude a maximum of 1.524 mm. into the groove of the gasket. The Inner Ring O.D. should match the gasket I.D. The inside diameter of the inner ring will be as per the customer requirement. The inner ring inside diameter tolerance should be ± 0.80 mm for NPS 1/2" to 60".

Ordering Information:

When ordering spiral wound gaskets please specify the following:

- Gasket Style.
- Gasket Shape (Circular)
- Gasket Thickness
- Nominal Pipe Size
- Pressure Rating
- Operating Temperature
- Gasket Standard.
- Winding and Filler materials
- Specific gasket dimensions if other than standard.
- Outer Ring Material.
- Thickness of gasket if other than Standard.
- Quantity

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