

The logo for SMITH Gaskets, with "SMITH" in green and "Gaskets" in black.

**SMITH Gaskets**

Smith International Gulf Services, LLC

The text "SEALING SOLUTIONS" in large, bold, white, sans-serif font, centered on a green background.

**SEALING  
SOLUTIONS**

The text "INDUSTRIAL GASKET PRODUCTS AND SERVICES" in white, sans-serif font, centered on a green background.

INDUSTRIAL GASKET PRODUCTS AND SERVICES

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**SMITH Gaskets:**  
Leading the Oil and Gas industry  
with Sealing Solutions.

## SMITH GASKETS

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# 01. WELCOME TO SMITH GASKETS

Over 100 years ago, Herman C. Smith started a small blacksmith workshop in California. When oil was discovered in surrounding towns, Smith found his niche supplying the tools required for drilling, often making modifications and new equipment.

His philosophy was one of creating and perfecting tools to increase efficiency, with customer focus and service excellence of the utmost importance.

Today, SMITH Gaskets continues to apply this philosophy. Their dedicated and knowledgeable teams continue to deliver innovative ideas and premium products worldwide.

Established in 1974 as a joint venture between Oilfields Supply Center Ltd. of Dubai and SMITH International Development Corporation, of USA, SMITH Gaskets supplies a comprehensive range of oilfield products and services including industrial gaskets, advanced cutting services and

hi-tech testing facilities. In August 2010, SMITH International merged with Schlumberger, a leading supplier in the oil and gas industry.

The SMITH Gaskets client base stretches throughout the Middle East and the new Malaysian facility broadens their reach into the Far East enabling SMITH Gaskets to offer services worldwide.

SMITH Gaskets believe in taking the lead, using modern technologies to stay at the forefront of industry requirements. Innovation, adaptability and enthusiasm make SMITH Gaskets your first... and only choice.



## OUR QUALITY YOUR GUARANTEE

The use of production technology ensures SMITH processes are more streamlined and faster than ever before, ensuring that quality is never compromised.



*We can provide a rapid response service with a high standard of quality.*

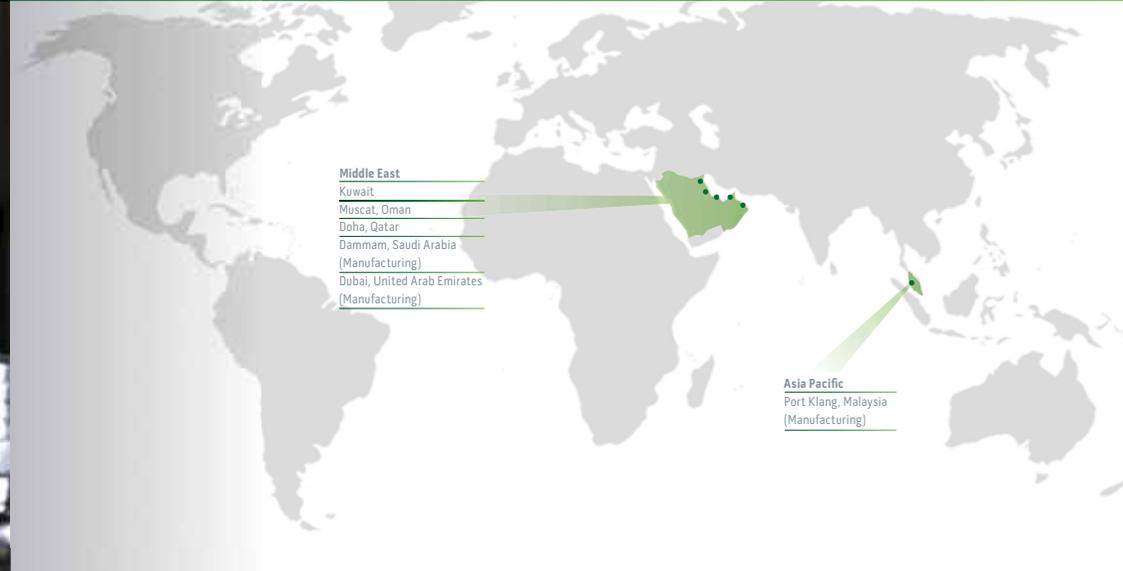
SMITH Gaskets:

- Meet Quality Certification to ISO 9001-2008
- Holds API Licenses 6A and 17D

We are proud of the products and services we provide. Our partnerships with suppliers mean we can provide a rapid response service with the high standard of quality expected from SMITH International Gulf Services (SIGS), without compromise.

## WORLDWIDE CONNECTIONS

SMITH Gaskets manufacturing is located in Dubai, Saudi Arabia and Malaysia with sales offices and agents worldwide.



*Worldwide Sealing solutions for the International Oil and Gas industry.*

Customer growth and a focus on the demanding requirements of the Oil and Gas industry allow SMITH Gaskets to set a global benchmark. SMITH Gaskets is always looking for new opportunities to expand both their presence and capabilities.

In 2008, SMITH International Gulf Services Malaysia Sdn Bhd was established to meet the demands of the oil and gas industry throughout the ASEAN region and beyond.

Located in Port Klang, Selangor, the SMITH Gaskets manufacturing facility provides a base for our operations in the region. Customers worldwide can benefit from direct contact and the expertise of SMITH Gaskets operations.

## 02. OUR PRODUCTS

When it comes to fitting critical service seals and gaskets, SMITH Gaskets has a strict "no room for error" policy.

Precision products from an experienced team provide the end user a guarantee of quality across all our products.



# RING JOINT GASKETS



Ring joint gaskets are metallic sealing rings suitable for high pressure and high temperature applications and are fitted in ring groove type flanges.

They are widely used in the Oil/Gas and Petrochemical industry, in valves and pipe-work. Choice of material may be determined to suit higher temperatures and aggressive media. They comply with ASME B16.20 standards and API spec 6A (where applicable).

The gasket hardness is carefully controlled and shall always be softer than the mating flanges to ensure a good seal and no damage to the flange surface (note: RTJ gaskets should not be re-used). All SMITH RTJ gaskets are manufactured from fully traceable materials and are stamped to the requirements of API 6A and ASME B16.20. DIN 50049 3.1 certification is supplied with all orders.

The gaskets are machined to the required tolerances and surface finish using high quality CNC lathes. All soft iron and carbon steel RTJ gaskets are electroplated with zinc 0.0005" thick in accordance with API specifications. Other non-standard styles of metal rings are also available like combination, IX, Delta and Lens to customer specifications.

## 3 TYPES AVAILABLE

### STYLE R



R type ring joint gaskets are available in oval or octagonal cross section and manufactured in accordance to API 6A and ASME B16.20 to suit API 6B and ASME/ANSI B16.5 flanges.

The oval ring fits the round and flat bottom ring groove flange, while the octagonal shape fits only the modern flat bottom groove flange.

### STYLE RX



The RX type RTJ gasket is manufactured in accordance to API 6A and ASME B16.20 to suit API 6B and ASME/ANSI B16.5 flanges. The RX is a pressure energized version of the R octagonal gasket and fits the R type flat bottomed groove.

The RX has an increased height and utilises the internal system pressure to energise and improve the seal as internal pressure increases. Some RX sizes have a pressure relief hole to equalise pressure both sides of the sealing faces.

### STYLE BX



The BX type RTJ gaskets are manufactured in accordance with API 6A and are suitable for use in high pressure API 6BX flanges. The gaskets form a metal to metal seal on assembly and the efficiency improves as internal pressure increases.

All BX sizes have a pressure relief hole to equalise pressure across sealing faces.

• SRX and SBX RTJ gaskets to API 17D for subsea applications.

• IX rings for compact flanges

• Other non-standard styles of metal rings are also available like combination, IX, Delta and Lens to customer specifications

## MATERIAL CROSS REFERENCE CHART

TRADE NAME	RING IDENTIFICATION	ASTM	DIN	WERKSTOFF NUMBER	AISI/SAE	UK	OTHER
Soft Iron	D	-	-	1.1003 / 1.0335	-	-	Aramco / StW24
LCS	S	-	-	1.1003 / 1.0335	-	-	Aramco / StW24
CS360 LT	CS360LT	A516 G70	-	-	-	-	-
4140	4140	UNS G41400	42CrMo4	1.7225	4140	-	-
F5	F5	UNS K42544	12CrMo195	1.7362	-	-	5Cr 1/2Mo
SS304	S304	S30400	X5CrNi 18 9	1.4301	304	304S15	-
SS304L	S304L	S30403	X2CrNi 18 9	1.4306	304L	304SS12	-
SS309	S309	S30900	X15CrNiSi2012	1.4828	309	309S24	-
SS310	S310	S31008	XX15CrNiSi2520	1.4841	310	310S24	-
SS316	S316	S31600	X5CrNiMo18 10	1.4401	316	316S16	-
SS316L	S316L	S31603	X2CrNiMo18 10	1.4404	316L	316S11/316S12	-
SS316L UREA	S316UG	S31603	X2CrNiMo 18 14 3	1.4435	-	-	-
SS316Ti	S316Ti	S31635	X10CrNiMoTi1810	1.4571	316Ti	320S31/320S17	-
SS321	S321	S32100	X10CrNiTi18 9	1.4541	321	321S12	-
SS347	S347	S34700	X10CrNiNb 18 9	1.455	347	347S51	-
SS410	S410	S41000	X10Cr13	1.4006	410	410S21	-
Monel 400	Monel400	N04400	NiCu30Fe	2.436	-	-	-
Inconel 600	INC600	N06600	NiCr15Fe	2.4816	-	-	-
Inconel 625	INC625	N06625	NiCr22Mo9Nb	2.4856	-	-	-
Inconel 718	INC718	N07718	-	-	-	-	-
Incoloy 800	INC800	N08800	X5NiCrAlTi31-20	1.4958	-	-	-
Incoloy 800H	INC800H	N08810	-	1.4958	-	-	-
Incoloy 825	INC825	N08825	NiCr21Mo	2.4858	-	-	-
904L	904L	N08904	X1NiCrMoCu25-20-5	1.4539	-	-	-
F51	F51	S31803	X2CrNiMoN22-5-3	1.4462	-	-	2205 / Duplex
F53	F53	S32750	X2CrNiMoN25-7-4	1.441	-	-	-
F55	F55	S32760	X2CrNiMoCuWN 25 7 4	1.4501	-	-	Zeron 100
F60	F60	S32205	-	-	-	-	Duplex
Titanium	Ti	R 50400	-	3.7035	-	-	-
17-4PH	17-4PH	S17400	-	1.4542	-	-	630
S254	S254	S31254	X1CrNiMoCuN20-18-7	1.4547	-	-	F44 / 6Mo
C276	C276	N10276	NiMo16Cr15W	2.4819	-	-	Hastelloy
Alloy 28	Alloy28	N08028	X1 NiCrMoCuN 31 27 4	1.4563	-	-	SANICRO 28

# RING JOINT GASKETS

IN ACCORDANCE WITH ASME B 16.20 AND API SPEC. 6A

ALL DIMENSIONS IN MILLIMETERS  
 \*Ring numbers specified in API 6A.  
 \*\*SMITH Manufacturing standard.

## STYLE R

RING NO	ASME B16.50 FLANGES					API 6B FLANGES				PCD	RING WIDTH	RING HEIGHT		GASKET WEIGHT, KG	
	150#	300-600#	900#	1500#	2500#	2000#	3000#	5000#	OVAL			OCT	OVAL	OCT	
R11	-	1/2	-	-	-	-	-	-	34.14	6.35	11.2	9.7	0.05	0.05	
R12	-	-	1/2	1/2	-	-	-	-	39.7	7.95	14.2	12.7	0.1	0.1	
R13	-	3/4	-	-	1/2	-	-	-	42.88	7.95	14.2	12.7	0.1	0.1	
R14	-	-	3/4	3/4	-	-	-	-	44.45	7.95	14.2	12.7	0.11	0.11	
R15	1	-	-	-	-	-	-	-	47.63	7.95	14.2	12.7	0.12	0.11	
R16	-	1	1	1	3/4	1	1	1	50.8	7.95	14.2	12.7	0.12	0.11	
R17	1 1/4	-	-	-	-	-	-	-	57.15	7.95	14.2	12.7	0.14	0.13	
R18	-	1 1/4	1 1/4	1 1/4	1	1 1/4	1 1/4	1 1/4	60.33	7.95	14.2	12.7	0.15	0.14	
R19	1 1/2	-	-	-	-	-	-	-	65.1	7.95	14.2	12.7	0.16	0.15	
R20*	-	1 1/2	1 1/2	1 1/2	-	1 1/2	1 1/2	1 1/2	68.28	7.95	14.2	12.7	0.17	0.15	
R21	-	-	-	-	1 1/4	-	-	-	72.24	11.13	17.5	16	0.3	0.29	
R22	2	-	-	-	-	-	-	-	82.55	7.95	14.2	12.7	0.2	0.19	
R23*	-	2	-	-	1 1/2	2, 2 1/16	-	-	82.55	11.13	17.5	16	0.34	0.33	
R24*	-	-	2	2	-	-	2, 2 1/16	2, 2 1/16	95.25	11.13	17.5	16	0.39	0.38	
R25	2 1/2	-	-	-	-	-	-	-	101.6	7.95	14.2	12.7	0.25	0.23	
R26*	-	2 1/2	-	-	2	2 1/2, 2 9/16	-	-	101.6	11.13	17.5	16	0.42	0.41	
R27*	-	-	2 1/2	2 1/2	-	-	2.5, 2 9/16	2.5, 2 9/16	107.95	11.13	17.5	16	0.45	0.43	
R28	-	-	-	-	2 1/2	-	-	-	111.13	12.7	19.1	17.5	0.57	0.55	
R29	3	-	-	-	-	-	-	-	114.3	7.95	14.2	12.7	0.28	0.26	
R30	-	3	-	-	-	-	-	-	117.48	11.13	17.5	16	0.48	0.47	
R31*	-	3	3	-	-	3, 3 1/8	3, 3 1/8	-	123.83	11.13	17.5	16	0.51	0.5	
R32	-	-	-	-	3	-	-	-	127	12.7	19.1	17.5	0.65	0.63	
R33	3 1/2	-	-	-	-	-	-	-	131.78	7.95	14.2	12.7	0.32	0.3	
R34	-	3 1/2	-	-	-	-	-	-	131.78	11.13	17.5	16	0.54	0.52	
R35*	-	-	-	3	-	-	-	3, 3 1/8	136.53	11.13	17.5	16	0.56	0.55	
R36	4	-	-	-	-	-	-	-	149.23	7.95	14.2	12.7	0.37	0.34	
R37*	-	4	4	-	-	4, 4 1/16	4, 4 1/16	3 1/2	149.23	11.13	17.5	16	0.62	0.6	
R38	-	-	-	-	4	-	-	-	157.18	15.88	22.4	20.6	1.16	1.14	
R39*	-	-	-	4	-	-	-	4, 4 1/16	161.93	11.13	17.5	16	0.67	0.65	
R40	5	-	-	-	-	-	-	-	171.45	7.95	14.2	12.7	0.42	0.39	
R41*	-	5	5	-	-	5, 5 1/8	5, 5 1/8	-	180.98	11.13	17.5	16	0.75	0.73	
R42	-	-	-	-	5	-	-	-	190.5	19.05	25.4	23.9	1.91	1.88	
R43	6	-	-	-	-	-	-	-	193.68	7.95	14.3	12.7	0.48	0.44	
R44*	-	-	-	5	-	-	-	5	193.68	11.13	17.5	16	0.8	0.78	
R45*	-	6	6	-	-	6, 7 1/16	6, 7 1/16	5 1/8	211.15	11.13	17.5	16	0.87	0.85	
R46*	-	-	-	6	-	-	-	6, 7 1/16	211.15	12.7	19.05	17.5	1.08	1.05	
R47*	-	-	-	-	6	-	-	-	228.6	19.05	25.4	23.9	2.29	2.26	
R48	8	-	-	-	-	-	-	-	247.65	7.95	14.3	12.7	0.61	0.56	
R49*	-	8	8	-	-	8, 9	8, 9	-	269.88	11.13	17.5	16	1.11	1.09	
R50*	-	-	-	8	-	-	-	8, 9	269.88	15.88	22.22	20.6	1.99	1.95	
R51	-	-	-	-	8	-	-	-	279.4	22.23	28.6	26.9	3.65	3.69	
R52	10	-	-	-	-	-	-	-	304.8	7.95	14.3	12.7	0.75	0.69	
R53*	-	10	10	-	-	10, 11	10, 11	-	323.85	11.13	17.5	16	1.34	1.3	
R54*	-	-	-	10	-	-	-	10, 11	323.85	15.88	22.22	20.6	2.39	2.35	
R55	-	-	-	-	10	-	-	-	342.9	28.58	36.51	35.1	7.35	7.68	
R56	12	-	-	-	-	-	-	-	381	7.95	14.3	12.7	0.93	0.87	
R57*	-	12	12	-	-	12, 13 5/8	12, 13 5/8	-	381	11.13	17.5	16	1.57	1.53	

## STYLE R

RING NO	ASME B16.50 FLANGES					API 6B FLANGES				PCD	RING WIDTH	RING HEIGHT		GASKET WEIGHT, KG	
	150#	300-600#	900#	1500#	2500#	2000#	3000#	5000#	OVAL			OCT	OVAL	OCT	
R58	-	-	-	12	-	-	-	-	381	22.23	28.6	26.9	4.98	5.03	
R59	14	-	-	-	-	-	-	-	396.88	7.95	14.5	12.7	0.98	0.9	
R60	-	-	-	-	12	-	-	-	406.4	31.75	39.7	38.1	10.47	11.09	
R61	-	14	-	-	-	14	14	-	419.1	11.13	17.5	16	1.73	1.69	
R62	-	-	14	-	-	-	-	-	419.1	15.88	22.22	20.6	3.09	3.04	
R63*	-	-	-	14	-	-	-	-	419.1	25.4	33.33	31.8	7.33	7.54	
R64	16	-	-	-	-	-	-	-	454.03	7.95	14.2	12.7	1.12	1.03	
R65*	-	16	-	-	-	16, 16 3/4	-	-	469.9	11.13	17.5	16	1.94	1.89	
R66*	-	-	16	-	-	-	16, 16 3/4	-	469.9	15.88	22.4	20.6	3.47	3.4	
R67	-	-	-	16	-	-	-	-	469.9	28.58	36.6	35.1	10.07	10.53	
R68	18	-	-	-	-	-	-	-	517.53	7.95	14.2	12.7	1.28	1.18	
R69*	-	18	-	-	-	18	-	-	533.4	11.13	17.5	16	2.2	2.15	
R70*	-	-	18	-	-	-	18	-	533.4	19.05	25.4	23.9	5.35	5.27	
R71	-	-	-	18	-	-	-	-	533.4	28.58	36.6	35.1	11.43	11.95	
R72	20	-	-	-	-	-	-	-	558.8	7.95	14.2	12.7	1.38	1.27	
R73*	-	20	-	-	-	20, 20 3/4	-	-	584.2	12.7	19.1	17.5	2.99	2.92	
R74*	-	-	20	-	-	-	20, 20 3/4	-	584.2	19.05	25.4	23.9	5.85	5.77	
R75	-	-	-	20	-	-	-	-	584.2	31.75	39.6	38.1	15.05	15.94	
R76	24	-	-	-	-	-	-	-	673.1	7.95	14.2	12.7	1.66	1.53	
R77	-	24	-	-	-	-	-	-	692.15	15.88	22.4	20.6	5.11	5.01	
R78	-	-	24	-	-	-	-	-	692.15	25.4	33.3	31.8	12.1	12.46	
R79	-	-	-	24	-	-	-	-	692.15	34.93	44.5	41.4	22.58	22.06	
R80	-	-	-	-	-	-	-	-	615.95	7.95	14.29**	12.7	1.59	1.4	
R81	-	-	-	-	-	-	-	-	635	14.3	20.64**	19.1	4.05	3.86	
R82*	-	-	-	-	-	-	-	-	57.15	11.13	17.46**	16	0.23	0.23	
R84*	-	-	-	-	-	-	-	-	63.5	11.13	17.46**	16	0.25	0.25	
R85*	-	-	-	-	-	-	-	-	79.38	12.7	19.05**	17.5	0.4	0.4	
R86*	-	-	-	-	-	-	-	-	90.5	15.88	22.22**	20.6	0.65	0.65	
R87*	-	-	-	-	-	-	-	-	100.03	15.88	22.22**	20.6	0.72	0.72	
R88*	-	-	-	-	-	-	-	-	123.83	19.05	25.4**	23.9	1.22	1.22	
R89*	-	-	-	-	-	-	-	-	114.3	19.05	25.4**	23.9	1.13	1.13	
R90*	-	-	-	-	-	-	-	-	155.58	22.23	28.58**	26.9	2.05	2.05	
R91*	-	-	-	-	-	-	-	-	260.35	31.75	39.68**	38.1	7.1	7.1	
R92	-	-	-	-	-	-	-	-	228.6	11.13	17.5	16	0.94	0.92	
R93	-	26	-	-	-	-	-	-	749.3	19.05	25.4**	23.9	7.4	7.4	
R94	-	28	-	-	-	-	-	-	800.1	19.05	25.4**	23.9	7.9	7.9	
R95	-	30	-	-	-	-	-	-	857.25	19.05	25.4**	23.9	8.47	8.47	
R96	-	32	-	-	-	-	-	-	914.4	22.23	28.58**	26.9	12.08	12.08	
R97	-	34	-	-	-	-	-	-	965.2	22.23	28.58**	26.9	12.75	12.75	
R98	-	36	-	-	-	-	-	-	1022.35	22.23	28.58**	26.9	13.51	13.51	
R99*	-	-	-	-	-	-	-	-	234.95	11.13	17.46**	16	0.95	0.95	
R100	-	-	26	-	-	-	-	-	749.3	28.58	36.51**	35.1	16.79	16.79	
R101	-	-	28	-	-	-	-	-	800.1	31.75	39.68**	38.1	21.83	21.83	
R102	-	-	30	-	-	-	-	-	857.25	31.75	39.68**	38.1	23.39	23.39	
R103	-	-	32	-	-	-	-	-	914.4	31.75	39.68**	38.1	24.95	24.95	
R104	-	-	34	-	-	-	-	-	965.2	34.93	44.45**	41.4	31.49	31.49	
R105	-	-	36	-	-	-	-	-	1022.35	34.93	44.45**	41.4	33.35	33.35	

# RING JOINT GASKETS

IN ACCORDANCE WITH ASME B 16.20 AND API SPEC. 6A

ALL DIMENSIONS IN MILLIMETERS  
\*Ring numbers specified in API 6A.  
\*\*SMITH manufacturing standard.

## STYLE RX

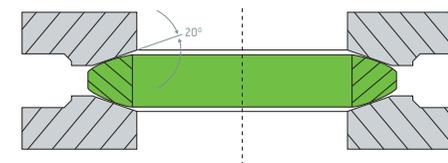
RING NO	720-960, 2000#	2900#	3000#	5000#	OD	HEIGHT	WIDTH	GASKET WEIGHT IN KG
RX20	1 1/2	-	1 1/2	1 1/2	76.2	19.05	8.74	0.24
RX23	2, 2 1/16	-	-	-	93.27	25.4	11.91	0.52
RX24	-	-	2, 2 1/16	2, 2 1/16	105.97	25.4	11.91	0.6
RX25	-	-	-	3 1/8	109.55	19.05	8.74	0.5
RX26	2 1/2, 2 9/16	-	-	-	111.91	25.4	11.91	0.64
RX27	-	-	2 1/2, 2 9/16	2 1/2, 2 9/16	118.26	25.4	11.91	0.68
RX31	3, 3 1/8	-	3, 3 1/8	-	134.54	25.4	11.91	0.78
RX35	-	-	-	3, 3 1/8	147.24	25.4	11.91	0.86
RX37	4, 4 1/16	-	4, 4 1/16	-	159.94	25.4	11.91	0.95
RX39	-	-	-	4, 4 1/16	172.64	25.4	11.91	1.03
RX41	5, 5 1/8	-	5, 5 1/8	-	191.69	25.4	11.91	1.15
RX44	-	-	-	5, 5 1/8	204.39	25.4	11.91	1.23
RX45	6, 7 1/16	-	6, 7 1/16	-	221.84	25.4	11.91	1.34
RX46	-	-	-	6, 7 1/16	222.25	28.58	13.49	1.66
RX47	-	-	-	8	245.26	41.28	19.84	3.88
RX49	8, 9	-	8, 9	-	280.59	25.4	11.91	1.72
RX50	-	-	-	8, 9	283.36	31.75	16.66	2.43
RX53	10, 11	-	10, 11	-	334.57	25.4	11.91	2.06
RX54	-	-	-	10, 11	337.34	31.75	16.66	2.92
RX57	12, 13 5/8	-	12, 13 5/8	-	391.72	25.4	11.91	2.42
RX63	-	-	-	14	441.73	50.8	27	11.96
RX65	16, 16 3/4	-	-	-	480.62	25.4	11.91	3
RX66	-	-	16, 16 3/4	-	457.99	31.75	16.66	4.25
RX69	18	-	-	-	544.12	25.4	11.91	3.41
RX70	-	-	18	-	550.06	41.28	19.84	9.12
RX73	20, 21 1/4	-	-	-	596.11	31.75	13.49	5.27
RX74	-	-	20, 20 3/4	-	600.86	41.28	19.84	10.01
RX82	-	1	-	-	67.87	25.4	11.91	0.36
RX84	-	1 1/2	-	-	74.22	25.4	11.91	0.4
RX85	-	2	-	-	90.09	25.4	13.49	0.4
RX86	-	2 1/2	-	-	103.58	28.58	15.09	0.81
RX87	-	3	-	-	113.11	28.58	15.09	0.9
RX88	-	4	-	-	139.29	31.75	17.48	1.46
RX89	-	3 1/2	-	-	129.77	31.75	18.26	3.09
RX90	-	5	-	-	174.63	44.45	19.84	7.75
RX91	-	10	-	-	286.94	45.24	30.18	1.5
RX99	8	-	8	-	245.67	25.4	11.91	2.2
RX201	-	-	-	1 3/8	51.46	11.3	5.74	0.1
RX205	-	-	-	1 13/16	62.31	11.1	5.56	0.13
RX210	-	-	-	2 9/16	97.64	19.05	9.53	0.35
RX215	-	-	-	4 1/16	140.89	25.4	11.91	0.8

## STYLE BX

RING NO	2000#	3000#	5000#	10000#	15000#	20000#	OUTSIDE DIA	HEIGHT OF THE RING	WIDTH OF THE RING	GASKET WEIGHT KG
BX 150	-	-	-	1 11/16	1 11/16	-	72.19	9.3	9.3	0.13
BX 151	-	-	-	1 13/16	1 13/16	1 13/16	76.4	9.63	9.63	0.15
BX 152	-	-	-	2 1/16	2 1/16	2 1/16	84.68	10.24	10.24	0.19
BX 153	-	-	-	2 9/16	2 9/16	2 9/16	100.94	11.38	11.38	0.29
BX 154	-	-	-	3 1/16	3 1/16	3 1/16	116.84	12.4	12.4	0.4
BX 155	-	-	-	4 1/16	4 1/16	4 1/16	147.96	14.22	14.22	0.55
BX 156	-	-	-	7 1/16	7 1/16	7 1/16	237.92	18.62	18.62	1.87
BX 157	-	-	-	9	9	9	294.46	20.98	20.98	2.97
BX 158	-	-	-	11	11	11	352.04	23.14	23.14	4.35
BX 159	-	-	-	13 5/8	-	-	426.72	25.7	25.7	6.53
BX 160	-	-	13 5/8	-	-	-	402.59	23.83	13.74	3.06
BX 161	-	-	16 1/2	-	-	-	491.41	28.07	16.21	5.35
BX 162	-	-	16 3/4	16 3/4	16 3/4	-	475.49	14.22	14.22	1.94
BX 163	-	-	18 3/4	-	-	-	556.16	30.1	17.37	6.9
BX 164	-	-	-	18 3/4	18 3/4	-	570.56	30.1	24.59	5.86
BX 165	-	-	21 1/2	-	-	-	624.71	32.03	18.49	8.76
BX 166	-	-	-	21 1/2	-	-	640.03	32.03	26.14	12.82
BX 167	26 3/4	-	-	-	-	-	759.36	35.86	13.11	8.53
BX 168	-	26 3/4	-	-	-	-	765.25	35.86	16.05	10.54
BX 169	-	-	-	5 1/8	-	-	173.51	15.85	12.93	0.73
BX 170	-	-	-	6 5/8	6 5/8	-	218.03	14.22	14.22	1.03
BX 171	-	-	-	8 9/16	8 9/16	-	267.44	14.22	14.22	1.24
BX 172	-	-	-	11 5/32	11 5/32	-	333.07	14.22	14.22	1.56
BX 303	30	30	-	-	-	-	852.75	37.95	16.97	-

## LENS RING GASKETS

Lens ring gaskets have spherical sealing faces designed to fit mating flanged recesses, providing a high pressure/temperature metal to metal seal.



Available in standard RTJ gasket materials and made to DIN standards, the lens ring, as with all RTJ type gaskets, should be softer than the flange material.

SMITH Gaskets believe in taking the lead, using modern technologies to stay at the forefront of industry requirements.



# SPIRAL WOUND GASKETS



Spiral Wound Gaskets are suitable for a wide range of operating conditions and can be adapted to suit almost all applications. The gaskets can seal fluid pressures up to 250 bar and temperature range of -200°C to in excess of 450°C.

The gasket is easy to install and remove, and will not cause damage to the flange surfaces.

A combination of winding materials and metals are available which enable the gasket to meet the requirements of varied operating conditions.

A steel outer guide ring centres the gasket within the bolt holes of the flange which stops over-compression of the sealing elements and prevents blow out. The sealing section is made up of a resilient 'V' shaped steel strip and a soft sealing filler, guaranteeing you excellent sealing. This combination of materials allows the gasket to seal under fluctuating temperature and pressure conditions.

## 3 TYPES AVAILABLE

### THICKNESS

All RS and RSI gaskets for standard flanges have a 4.5mm thick sealing section of windings and filler material, with 3.2mm thick solid metal guide rings.

### STYLE RS



The standard gasket choice for RF and FF flanges, with the guide ring and sealing element made to ASME B16.20/DIN standards.

### STYLE RSI



The standard RS style with an extra inner ring fitted, providing an additional compression stop that protects the sealing element from heat and corrosion.

Inner rings are standard on all gaskets NPS24" class 900#, NPS12" and above in 1500#, and NPS4" and above in 2500#. All spiral wound gaskets with PTFE filler material have inner rings fitted.

### STYLE S



Style S gaskets are a sealing element only with a few additional layers of winding strip for use in tongue and groove and male/female flanges. These gaskets are also available in oval, obround and diamond shape for valve bonnet and handhole applications.

## COLOR CODING AND ABBREVIATIONS FOR GASKET MATERIALS

MATERIAL	ABBREVIATION	COLOR CODE
METALLIC WINDING MATERIALS		
Carbon steel	CRS	Silver
304 SS	304	Yellow
304 L SS	304 L	No color
309 SS	309	No color
316 L SS	316 L	Green
347 SS	347	Blue
321 SS	321	Turquoise
Monel 400	MON	Orange
Nickel 200	NI	Red
Titanium	TI	Purple
Hastelloy B	HAST B	Brown
Hastelloy C	HAST C	Beige

MATERIAL	ABBREVIATION	COLOR CODE
METALLIC WINDING MATERIALS		
Inconel 600	INC 600	Gold
Inconel 625	INC 625	Gold
Incoloy 800	IN 800	White
Incoloy 825	IN 825	White

MATERIAL	ABBREVIATION	COLOR CODE
NONMETALLIC FILLER MATERIALS		
Poly tetra fluoro ethylene	PTFE	White stripe
Mica-graphite	Manufacturer's designation	Pink stripe
Flexible graphite	F.G.	Gray stripe
Ceramic	CER	Light green stripe

## SEATING STRESS RANGE

To ensure leak-proof connection

FILTER	SINGLE-SIDED ENCLOSED			DOUBLE-SIDED ENCLOSED		
	SEATING STRESS (20 C)			SEATING STRESS (20 C)		
	MIN [N/mm <sup>2</sup> ]	OPT. [N/mm <sup>2</sup> ]	MAX. [N/mm <sup>2</sup> ]	MIN [N/mm <sup>2</sup> ]	OPT. [N/mm <sup>2</sup> ]	MAX. [N/mm <sup>2</sup> ]
Graphite	50	95	180	50	122	300
PTFE	50	80	130	50	110	250

**GUIDE RINGS:** Guide Rings are normally carbon steel ASTM A -285 -82 GR-C or stainless steel 316. Inner ring material usually matches the winding metal

## FILLER MATERIAL SELECTION

MATERIAL	TEMPERATURE [°C] MIN. MAX.	MAX. OPERATING PRESSURE [BAR]	GAS TIGHTNESS	APPLICATION
Graphite	-200 500	250	Good	Aggressive media
PTFE	-200 240	100	Good	Aggressive media

## MATERIALS CHART

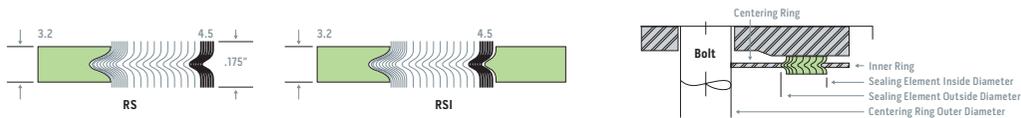
\*10mm steel ball indenter with 3000kg load

MATERIAL (TRADE NAME)	DIN SPECIFICATION	DIN MATERIAL NR.	AISI UNS	B.S ASTM	HARDNESS HV 10*	TEMP. [C] MIN. MAX.	VOLUMETRIC MASS [G/CM <sup>3</sup> ]
Soft Iron (Armco)	-	1.1003	-	-	90 - 100	-60 500	7.85
Steel (LCS)	RSt.37.2	1.0038	-	-	100 - 130	-40 500	7.85
Stainless Steel 304	X5CrNi18	1.4301	304	304S15/16/31	130 - 180	-250 550	7.9
Stainless Steel 304 L	X2CrNi189	1.4306	304L	304S11	130 - 190	-250 550	7.9
Stainless Steel 309	X15CrNiMo2012	1.4828	309	309S24	130 - 190	-100 1000	7.9
Stainless Steel 316	X5CrNiMo1810	1.4401	316	316S31/33	130 - 180	-100 550	7.9
Stainless Steel 316 L	X2CrNiMo1810	1.4404	316L	316S11/13	130 - 190	-100 550	7.9
Stainless Steel 316 Ti	X10CrNiMoTi1810	1.4571	316Ti	320S31	130 - 190	-100 550	7.8
Stainless Steel 321	X10CrNiTi189	1.4541	321	321S12/49/87	130 - 190	-250 550	7.9
Stainless Steel 347	X10CrNiNb189	1.4550	347	347S31	130 - 190	-250 550	7.9
Nickel 200	Ni 99.2	2.4066	N02200	3072-76 NA11	90 - 120	-250 600	8.9
Monel 400	NiCu 30 Fe	2.4360	N04400	3072-76 NA13	110 - 150	-125 600	8.8
Inconel 600	NiCr 15 Fe	2.4816	N06600	3072-76 NA14	120 - 180	-100 950	8.4
Incoloy 800	X10NiCrAlTi 3220	1.4876	N08800	3072-76 NA15	140 - 220	-100 850	8.4
Incoloy 825	NiCr 21 Mo	2.4858	N08825	3072-76 NA 16	120 - 180	-100 450	8.14
Hastelloy B2	NiMo 28	2.4617	N10665	-	170 - 230	-200 450	9.2
Hastelloy C276	NiMo 16Cr15W	2.4819	N10276	-	170 - 230	-200 450	8.9
Titanium	Ti 99.8	3.7025	-	-	110 - 140	-250 500	4.5

# SPIRAL WOUND GASKETS

DIMENSIONS AS PER ASME B16.20-2007

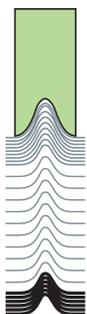
## STYLE RS & RSI FOR ASME/ANSI B16.50/BS1560 FLANGES



SIZE	DN	INNER RING ID					ELEMENT ID					ELEMENT OD					OUTER RING OD				
		CLASS					CLASS					CLASS					CLASS				
		150 300	400 600	900	1500	2500	150 300	400 600	900	1500	2500	150 600	900 2500	150	300	400	600	900	1500	2500	
1/2"	15	14.2	14.2	-	14.2	14.2	19.1	19.1	-	19.1	19.1	31.8	31.8	47.8	54.1	-	54.1	-	63.5	69.9	
3/4"	20	20.6	20.6	-	20.6	20.6	25.4	25.4	-	25.4	25.4	39.6	39.6	57.2	66.8	-	66.8	-	69.9	76.2	
1"	25	26.9	26.9	-	26.9	26.9	31.8	31.8	-	31.8	31.8	47.8	47.8	66.8	73.2	-	73.2	-	79.5	85.9	
1 1/4"	32	38.1	38.1	-	33.3	33.3	47.8	47.8	-	39.6	39.6	60.5	60.5	76.2	82.6	-	82.6	-	88.9	104.9	
1 1/2"	40	44.5	44.5	-	41.4	41.4	54.1	54.1	-	47.8	47.8	69.9	69.9	85.9	95.3	-	95.3	-	98.6	117.6	
2"	50	55.6	55.6	-	52.3	52.3	69.9	69.9	-	58.7	58.7	85.9	85.9	104.9	111.3	-	111.3	-	143.0	146.1	
2 1/2"	65	66.5	66.5	-	63.5	63.5	82.6	82.6	-	69.9	69.9	98.6	98.6	124.0	130.3	-	130.3	-	165.1	168.4	
3"	80	81.0	81.0	78.7	78.7	78.7	101.6	101.6	95.3	92.2	92.2	120.7	120.7	136.7	149.4	-	149.4	168.4	174.8	196.9	
4"	100	106.4	102.6	102.6	97.8	97.8	127.0	120.7	117.6	117.6	149.4	149.4	174.8	181.1	177.8	193.8	206.5	209.6	235.0	-	
5"	125	131.8	128.3	128.3	124.5	124.5	155.7	147.6	147.6	143.0	143.0	177.8	177.8	196.9	215.9	212.9	241.3	247.7	254.0	279.4	
6"	150	157.2	154.9	154.9	147.3	147.3	182.6	174.8	174.8	171.5	171.5	209.6	209.6	222.3	251.0	247.7	266.7	289.1	282.7	317.5	
8"	200	215.9	205.7	196.9	196.9	196.9	233.4	225.6	222.3	215.9	215.9	263.7	257.3	279.4	308.1	304.8	320.8	358.9	352.6	387.4	
10"	250	268.2	255.3	246.1	246.1	246.1	287.3	274.6	276.4	266.7	270.0	317.5	311.2	339.9	362.0	358.9	400.1	435.1	435.1	476.3	
12"	300	317.5	307.3	292.1	292.1	292.1	339.9	327.2	323.9	323.9	317.5	374.7	368.3	409.7	422.4	419.1	457.2	498.6	520.7	549.4	
14"	350	349.3	342.9	320.8	320.8	-	371.6	362.0	355.6	362.0	-	406.4	400.1	450.9	485.9	482.6	492.3	520.7	577.9	-	
16"	400	400.1	389.9	374.7	368.3	-	422.4	412.8	412.8	406.4	-	463.6	457.2	514.4	539.8	536.7	565.2	574.8	641.4	-	
18"	450	449.3	438.2	425.5	425.5	-	474.7	469.9	463.6	463.6	-	527.1	520.7	549.4	596.9	593.9	612.9	638.3	704.9	-	
20"	500	500.1	489	482.6	476.3	-	525.5	520.7	520.7	514.4	-	577.9	571.5	606.6	654.1	647.7	682.8	698.5	755.7	-	
24"	600	603.3	590.6	590.6	577.9	-	628.7	628.7	628.7	616.0	-	685.8	679.5	717.6	774.7	768.4	790.7	838.2	901.7	-	

## GASKET THICKNESS

Sealing element: .175" / 4.5mm  
 Guide and Inner ring: .125" (1/8") / 3.2mm



RS



RSI

## STYLE RS & RSI FOR ASME/ANSI B16.47 SERIES A FLANGES (MSS SP-44)



SIZE	DN	INNER RING ID					ELEMENT ID					ELEMENT OD					OUTER RING OD				
		CLASS					CLASS					CLASS					CLASS				
		#150	#300	#400	#600	#900	#150	#300	#400	#600	#900	#150	#300	#400	#600	#900	#150	#300	#400	#600	#900
22"	550	552.5	552.5	552.5	552.5	-	577.9	577.9	577.9	577.9	616	609.6	628.7	628.7	628.7	685.8	660.4	704.8	701.7	733.4	838.2
26"	650	654.1	654.1	660.4	647.7	660.4	673.1	685.8	685.8	685.8	704.9	736.6	736.6	736.6	736.6	774.7	835.2	831.9	898.7	892.3	914.4
28"	700	704.9	704.9	711.2	698.5	711.2	723.9	736.6	736.6	736.6	755.7	787.4	787.4	787.4	787.4	831.9	898.7	892.3	914.4	946.2	-
30"	750	755.7	755.7	755.7	755.7	774.7	774.7	793.8	793.8	793.8	806.5	844.6	844.6	844.6	844.6	882.7	952.5	946.2	971.6	1009.7	-
32"	800	806.5	806.5	812.8	812.8	812.8	825.5	850.9	850.9	850.9	850.9	860.6	901.7	901.7	901.7	939.8	1006.6	1003.3	1022.4	1073.2	-
34"	850	857.3	857.3	863.6	863.6	863.6	876.3	901.7	901.7	901.7	901.7	911.4	952.5	952.5	952.5	990.6	1057.4	1054.1	1073.2	1136.7	-
36"	900	908.1	908.1	917.7	917.7	920.8	927.1	955.8	955.8	955.8	958.9	968.5	1006.6	1006.6	1006.6	1009.7	1047.8	1117.6	1117.6	1130.3	1200.2
38"	950	958.9	952.5	952.5	952.5	1009.7	977.9	977.9	971.6	990.6	1035.1	1019.3	1016.0	1022.4	1041.4	1085.9	1111.3	1054.1	1073.2	1104.9	1200.2
40"	1000	1009.7	1003.3	1000.3	1009.7	1060.5	1028.7	1022.4	1025.7	1047.8	1098.6	1070.1	1070.1	1076.5	1098.6	1149.4	1162.1	1114.6	1127.3	1155.7	1251.0
42"	1050	1060.5	1054.1	1051.1	1066.8	1111.3	1079.5	1073.2	1076.5	1104.9	1149.4	1124.0	1120.9	1127.3	1155.7	1200.2	1219.2	1165.4	1178.1	1219.2	1301.8
44"	1100	1111.3	1104.9	1104.9	1111.3	1155.7	1130.3	1130.3	1162.1	1206.5	1178.1	1181.1	1181.1	1212.9	1257.3	1276.4	1219.2	1231.9	1270.0	1368.6	-
46"	1150	1162.1	1152.7	1168.4	1162.1	1219.2	1181.1	1178.1	1193.8	1212.9	1270.0	1228.9	1228.9	1244.6	1263.7	1320.8	1327.2	1273.3	1289.1	1327.3	1435.1
48"	1200	1212.9	1209.8	1206.5	1219.2	1270.0	1231.9	1235.2	1244.6	1270.0	1320.8	1279.7	1286.0	1295.4	1320.8	1371.6	1384.3	1273.1	1346.2	1390.7	1485.9
50"	1250	1263.7	1244.6	1257.3	1270.0	-	1282.7	1295.4	1295.4	1320.8	-	1333.5	1346.2	1346.2	1371.6	-	1435.1	1378.0	1403.4	1447.8	-
52"	1300	1314.5	1320.8	1308.1	1320.8	-	1333.5	1346.2	1346.2	1371.6	-	1384.3	1397.0	1397.0	1422.4	-	1492.3	1428.8	1454.2	1498.6	-
54"	1350	1358.9	1352.6	1352.6	1378.0	-	1384.3	1403.4	1403.4	1428.8	-	1435.1	1454.2	1454.2	1479.6	-	1549.4	1492.3	1517.7	1555.8	-
56"	1400	1409.7	1403.4	1403.4	1428.8	-	1435.1	1454.2	1454.2	1479.6	-	1485.9	1505.0	1505.0	1530.4	-	1606.6	1543.1	1568.5	1612.9	-
58"	1450	1460.5	1447.8	1454.2	1473.2	-	1485.9	1511.3	1505.0	1536.7	-	1536.7	1562.1	1555.8	1587.5	-	1663.7	1593.9	1619.3	1663.7	-
60"	1500	1511.3	1524.0	1517.7	1530.4	-	1536.7	1562.1	1568.5	1593.9	-	1587.5	1612.9	1619.3	1644.7	-	1714.5	1644.7	1682.8	1733.6	-

## STYLE RS & RSI FOR ASME/ANSI B16.47 SERIES B FLANGES (API-605)

SIZE	DN	D1 - INNER RING ID					D2 - ELEMENT ID					D3 - ELEMENT OD					D4 - OUTER RING OD				
		CLASS					CLASS					CLASS					CLASS				
		#150	#300	#400	#600	#900	#150	#300	#400	#600	#900	#150	#300	#400	#600	#900	#150	#300	#400	#600	#900
26"	650	654.1	654.1	654.1	644.7	666.8	673.1	673.1	666.8	663.7	692.2	698.5	711.2	698.5	714.5	749.3	725.4	771.7	746.3	765.3	838.2
28"	700	704.9	704.9	701.8	692.2	717.6	723.9	723.9	714.5	704.9	743.0	749.3	762.0	749.3	755.7	800.1	776.2	825.5	800.1	819.2	901.7
30"	750	755.7	755.7	752.6	752.6	781.1	774.7	774.7	765.3	778.0	806.5	800.1	812.8	806.5	828.8	857.3	827.0	886.0	857.3	879.6	958.9
32"	800	806.5	806.5	800.1	793.8	838.2	825.5	825.5	812.8	831.9	863.6	850.9	863.6	860.6	882.7	914.4	881.1	939.8	911.4	933.5	1016.0
34"	850	857.3	857.3	850.9	850.9	895.4	876.3	876.3	866.9	889.0	920.8	908.1	914.4	911.4	939.8	971.6	935.0	993.9	962.2	997.0	1073.2
36"	900	908.1	908.1	898.7	901.7	920.8	927.1	927.1	917.7	939.8	946.2	958.9	965.2	965.2	990						

# SPIRAL WOUND GASKETS

DIMENSIONS AS PER JIS B2404

ALL DIMENSIONS IN MILLIMETERS

## SPIRAL WOUND GASKETS FOR JIS B 2220 & JIS B 2238 - 2240 FLANGES

SIZE	PRESSURE RATING 10KGF/CM2				PRESSURE RATING 16 TO 20KGF/CM2				PRESSURE RATING 30KGF/CM2			
	INSIDE DIA *	ELEMENT ID	ELEMENT OD	CR OD	INSIDE DIA	ELEMENT ID	ELEMENT OD	CR OD	INSIDE DIA	ELEMENT ID	ELEMENT OD	CR OD
10	18	24	37	52	18	24	37	52	18	24	37	59
15	22	28	41	57	22	28	41	57	22	28	41	64
20	28	34	47	62	28	34	47	62	28	34	47	69
25	34	40	53	74	34	40	53	74	34	40	53	79
32	43	51	67	84	43	51	67	84	43	51	67	89
40	49	57	73	89	49	57	73	89	49	57	73	100
50	61	69	89	104	61	69	89	104	61	69	89	114
65	77	87	107	124	77	87	107	124	68	78	98	140
80	89	98	118	134	89	99	119	140	80	90	110	150
90	102	110	130	144	102	114	139	150	92	102	127	162
100	115	123	143	159	115	127	152	165	104	116	141	172
125	140	148	173	190	140	152	177	202	128	140	165	207
150	166	174	199	220	166	182	214	237	153	165	197	249
175	-	201	226	245	-	-	-	-	202	218	250	294
200	217	227	252	270	217	233	265	282	251	271	311	360
225	-	252	277	290	-	-	-	-	300	320	360	418
250	268	278	310	332	268	288	328	354	336	356	396	463
300	319	329	361	377	319	339	379	404	383	403	453	524
350	356	366	406	422	356	376	416	450	-	-	-	-
400	407	417	457	484	407	432	482	508	-	-	-	-
450	458	468	518	539	458	483	533	573	-	-	-	-
500	508	518	568	594	508	533	583	628	-	-	-	-
550	559	569	619	650	559	584	634	684	-	-	-	-
600	610	620	670	700	610	635	685	734	-	-	-	-

SIZE	PRESSURE RATING 40KGF/CM2				PRESSURE RATING 63KGF/CM2			
	INSIDE DIA	ELEMENT ID	ELEMENT OD	CR OD	INSIDE DIA	ELEMENT ID	ELEMENT OD	CR OD
10	15	21	34	59	15	21	34	64
15	18	24	37	64	18	24	37	69
20	23	29	42	69	23	29	42	75
25	29	35	48	79	29	35	48	80
32	38	44	60	89	38	44	60	90
40	43	51	67	100	43	51	67	107
50	55	63	79	114	55	63	79	125
65	68	78	98	140	68	78	98	152
80	80	90	110	150	80	90	110	162
90	92	102	127	162	92	102	127	179
100	104	116	141	182	104	116	141	194
125	128	140	165	224	128	140	165	235
150	153	165	197	265	153	165	197	275
175	202	218	250	315	202	218	250	328
200	251	271	311	378	251	271	311	394
225	300	320	360	434	300	320	360	446
250	336	356	396	479	336	356	396	488
300	383	403	453	531	383	403	453	545

## SPIRAL WOUND GASKET DIMENSIONS TO SUIT DIN FLANGES

SIZE	INNER RING INSIDE DIA	ELEMENT INSIDE DIA	ELEMENT OD PN10 - PN40	ELEMENT OD PN64 - PN250	CENTRE RING OD							
					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	-	-	-



Automatic manufacturing processes and continuous quality checking ensures optimum quality for each and every product.



# FLAT CUT GASKETS & SHEET PRODUCTS



Non-metallic, flat cut gaskets are used by many industries as they can be made to suit a large variety of applications.

As well as providing products cut to recognised industry standards, SMITH Gaskets also provides a custom service for design and manufacture to fit specific applications. Many factors are taken into consideration when helping you select the right product including temperature, application, media and pressure.

SMITH Gaskets stock carries a wide range of competitively priced, utility grade gaskets plus gasket styles to meet varying specific applications such as high temperature, low load, high torque and high pressure for many different media.

A comprehensive range of rubber, non-asbestos, virgin and modified PTFE, and graphite grades (industrial and high purity) in sheet, roll and cut gasket forms are available in stock.



## NON-ASBESTOS PRODUCT GUIDE

Products are available in the following thickness: 0.4mm, 0.8mm, 1.6mm and 3.2mm. Sheet size is generally 1500mm x 1500mm (1500mm x 3000mm available on request). Flat ring gaskets are recommended for class 150# and 300# application.

### SMITH U-MAX



Utility grade gasket material. Organic fibres, NBR  
Application: Good resistance to water, gases, oils, gasoline/fuels, mild acids and alkalis.  
180° C / 356 F; 40 bar / 356 psi

### SMITH UW-MAX



High strength / pressure wire re-inforced. Synthetic fibres, NBR/SBR, Wire re-inforced  
Application: Water, gases, gasoline/fuels, excellent dynamic and thermal resistance.  
400° C / 752 F; 140 bar/2030 psi

### SMITH Y-MAX



General purpose gasket material. Aramid fibres, NBR.  
Application: Good resistance to water, gases, oils & fuels. Approved for BAM (Oxygen); BS7531 grade Y and WRAS (potable water) and TA-Luft (VDI 2440)  
350° C / 662 F; 100 bar/1450 psi

### SMITH CF-MAX



Carbon Fibre, NBR. High pressure / High temperature, ideal chemical and petrochemical industry material.  
Application: Saturated steam, aliphatic (light) hydrocarbons, hot oils, gasoline, chemicals & refrigerants. Approved for BAM (Oxygen) and BS7531 grade X.  
400° C / 752 F; 100 bar/1450 psi

### SMITH X-MAX



Glass Fibres, NBR. Excellent torque retention, good steam and thermal resistance.  
Application: Water, Oils, gases, fuels, organic and inorganic acids. Approved for BS 7531 grade X and TA-Luft (VDI 2440)

### PTFE SHEET



Application: Acid and chemical resistant. 260° C / 50 bar.

## ELASTOMERS

Our Elastomers can be die or waterjet cut to customer specifications.

Made of a pliable plastic material that insulates and does not deform once hardened, SMITH Gaskets' elastomers are available in 1.5mm, 3mm, 5mm and 10mm thickness and can be made thicker on request. A standard roll is 1.2m x 10m with larger available on request. The hardness is 65 shore A + -5 average. Cotton fabric inserts are available on request.

### NEOPRENE (CR)



Applications: Good oil and petroleum resistance.  
94° C / 17 bar.

### NITRILE (NBR; BUNA-N)



Application: Good resistance to oil, solvents and fuels.  
94° C / 17 bar.

### ETHYLENE PROPYLENE DIENE MONOMER (EPDM)



Application: Good resistance to ozone, sunlight, acids, alkalis and ketones. Not suitable for fuels and oils. 120° C / 17 bar.

### FLUOROELASTOMER (FKM) Viton®



Application: Excellent resistance to heat and oil combinations and a wide range of concentrated acids and chemicals.  
205° C / 17 bar.

### STYRENE BUTADIENE (SBR; Buna-S)



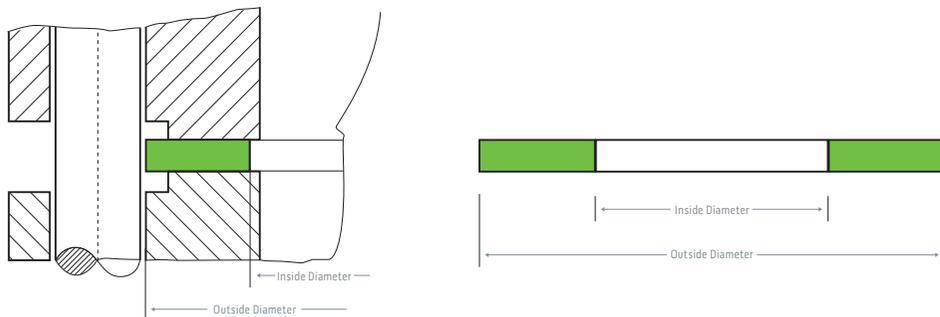
Application: Good abrasion and impact resistance - general purpose sheet. Not suitable for oils, fuels and solvents.  
94° C / 10 bar.

Elastomer descriptions as per ASTM D 1418 ISO/DIN 162 designations. Viton® is a registered trademark of DuPont Performance Elastomers.

# FLAT CUT GASKETS & SHEET PRODUCTS

ALL DIMENSIONS IN MILLIMETERS  
\*SMITH Manufacturing standard

## FLAT RING GASKETS DIMENSIONS TO ASME B16.21 USED WITH ASME/ANSI B16.5 RF FLANGES.



NOMINAL PIPE SIZE		INSIDE DIAMETER	OUTSIDE DIAMETER				
DN	INCH		# 150	# 300	# 400	# 600	# 900
15	½	21	48	54	54	54	64
20	¾	27	57	67	67	67	70
25	1	33	67	73	73	73	79
32	1 1/4	42	76	83	83	83	89
40	1 1/2	48	86	95	95	95	98
50	2	60	105	111	111	111	143
65	2 1/2	73	124	130	130	130	165
80	3	89	137	149	149	149	168
90	3 1/2	102	162	165	162	162	-
100	4	114	175	181	178	194	206
125	5	141	197	216	213	241	248
150	6	168	222	251	248	267	289
200	8	219	279	308	305	321	359
250	10	273	340	362	359	400	435
300	12	324	410	422	419	457	498
350	14	356	451	486	483	492	521
400	16	406	514	540	537	565	575
450	18	457	549	597	594	613	638
500	20	508	606	654	648	683	699
600	24	610	718	775	768	791	838

## FLAT RING GASKETS TO ASME B16.21 Used with ASME/ANSI B16.5 Series "A" RF flanges

NOMINAL PIPE SIZE		INSIDE DIAMETER	OUTSIDE DIAMETER			
DN	INCH		# 150	# 300	# 400	# 600
550 *	22 *	559	660	704	701	733
650	26	660	775	835	832	867
700	28	711	832	899	892	914
750	30	762	883	953	946	972
800	32	813	940	1006	1003	1022
850	34	864	991	1057	1054	1073
900	36	914	1048	1118	1118	1130
950	38	965	1111	1054	1073	1105
1000	40	1016	1162	1114	1127	1156
1050	42	1067	1219	1165	1178	1219
1100	44	1118	1276	1219	1232	1270
1150	46	1168	1327	1273	1289	1327
1200	48	1219	1384	1324	1346	1391
1250	50	1270	1435	1378	1403	1448
1300	52	1321	1492	1429	1454	1499
1350	54	1372	1549	1492	1518	1556
1400	56	1422	1607	1543	1568	1613
1450	58	1473	1664	1594	1619	1664
1500	60	1524	1715	1645	1683	1721

## FLAT RING GASKETS TO ASME B16.21 Used with ASME/ANSI B16.5 FF 150 lbs flanges

NOMINAL PIPE SIZE		ID	OD	NO OF HOLES	HOLE DIAMETER	BCD
DN	INCH					
15	½	21	89	4	5/8	60.3
20	¾	27	98	4	5/8	69.9
25	1	33	108	4	5/8	79.4
32	1 1/4	42	117	4	5/8	88.9
40	1 1/2	48	127	4	5/8	98.4
50	2	60	152	4	¾	120.7
65	2 1/2	73	178	4	¾	139.7
80	3	89	191	4	¾	152.4
90	3 1/2	102	216	8	¾	177.8
100	4	114	229	8	¾	190.5
125	5	141	254	8	7/8	215.9
150	6	168	279	8	7/8	241.3
200	8	219	343	8	7/8	298.5
250	10	273	406	12	1	362
300	12	324	483	12	1	431.8
350	14	356	533	12	1 1/8	476.3
400	16	406	597	16	1 1/8	539.8
450	18	457	635	16	1 1/8	577.9
500	20	508	699	20	1 1/8	635
600	24	610	813	20	1 3/8	749.3

## ⊕ FLEXIBLE GRAPHITE SHEET PRODUCTS

### FLEXIBLE GRAPHITE SHEET PRODUCTS

Excellent sealing for extreme conditions withstanding heat, pressure and aggressive chemicals - seals easily under moderate bolt loads.

Available thicknesses are 0.8 mm, 1.6 mm, 2.0 mm and 3.2 mm  
Sheet size is generally 1500 mm x 1500 mm or 1000 mm x 2000 mm

#### SMITH GRAFMAX



Pure flexible graphite without steel insertion.  
Application: Steam, hydrocarbons, most chemicals.  
Not suitable in strong oxidizing media. 450° C / 80 bar.

#### SMITH GRAFMAX F



Pure flexible graphite with 0.05mm flat AISI 316 foil insertion.  
Application: Steam, hydrocarbons, most chemicals.  
Not suitable in strong, close-up oxidizing media. 450° C / 100 bar.

#### SMITH GRAFMAX T



Pure flexible graphite with 0.1 mm AISI 316 mechanically bonded tang insertion.  
Application: Steam, hydrocarbons, most chemicals.  
Not suitable in strong, close-up oxidizing media. 450° C / 200 bar.

#### SMITH GRAFMAX PREMIUM



A range of high purity (99%), high temperature and oxidation resistant graphite sheets and strip for critical service applications. Please enquire for details.



A photograph of a warehouse aisle with high metal shelving units filled with stacks of cardboard boxes. A person wearing a dark green jumpsuit is walking away from the camera down the aisle, carrying a large roll of material over their shoulder. The lighting is bright, and the perspective is from a low angle looking down the aisle.

Reducing plant and operations outages demands availability of spares and critical service items. SMITH Gaskets hold extensive stocks of raw materials and common size gaskets to provide ex stock availability.

Where exotic or special sizes are required we ensure our raw material supply chain partners can react rapidly ensuring you don't lose production.

# FLANGE INSULATING SETS



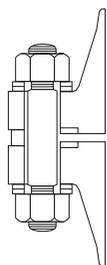
Combat corrosion using SMITH Gaskets flange insulating sets. Designed to resist the effect of electro-chemical corrosion. Systems mitigation for corrosion and electrical isolation.

Premium grade high dielectric strength materials ensure the flange joint is designed to withstand the maximum electric stress without breakdown.

Other materials available upon request.

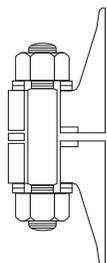


## TYPE RF



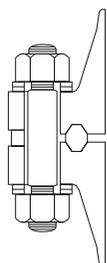
**Each set consists of:**  
 1 x Central Gasket - RF  
 (Plain or Neoprene Faced Phenolic)  
 1 x Insulating Sleeve per bolt  
 2 x Insulating Washers per bolt  
 2 x Plated Metallic Washers per bolt

## TYPE FF

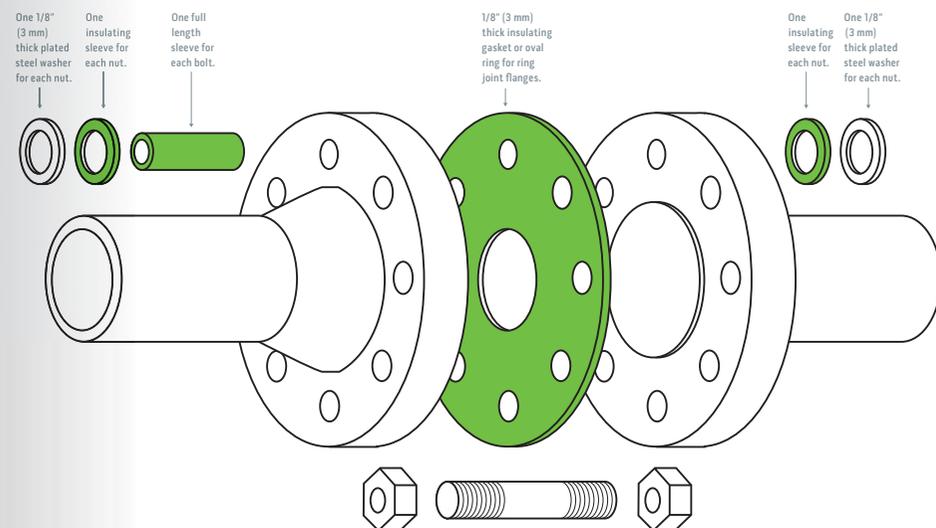


**Each set consists of:**  
 1 x Central Gasket - FF  
 (Plain or Neoprene Faced Phenolic)  
 1 x Insulating Sleeve per bolt  
 2 x Insulating Washers per bolt  
 2 x Plated Metallic Washers per bolt

## TYPE RTJ



**Each set consists of:**  
 1 x Central Gasket - Oval RTJ Phenolic  
 1 x Insulating Sleeve per bolt  
 2 x Insulating Washers per bolt  
 2 x Plated Metallic Washers per bolt



## GASKET MATERIAL

ASTM TEST METHOD	PROPERTIES	PLAIN PHENOLIC	NEOPRENE COATED PHENOLIC	G10
D149	Di-electric strength	400-500 V/mil	400-500 V/mil	550 V/mil
D695	Compressive strength	30,000 Psi	50,000 Psi	55,000 Psi
D228	Water absorption	1.60%	0.75%	0.12%
D257	Insulation resistance	45,000MW	100,000MW	200,000MW
D790	Flexural strength	22,000 Psi	27,000 Psi	66,000 Psi
D256	Izod impact strength	10KJ/m2	10KJ/m2	15KJ/m2
D638	Tensile strength	17,400 Psi	17,400 Psi	45,000 Psi
	Temperature	-54 to 107 °C	100 °C	150 °C

## SLEEVE MATERIAL

G10	MYLAR - SLEEVES
550 V/mil	4000 V/mil
55,000 Psi	-
0.12%	0.22%
200,000MW	-
66,000 Psi	13,000 Psi
15KJ/m2	-
45,000 Psi	-
150 °C	176 °C

# METAL JACKETED GASKETS



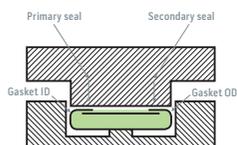
With a high resistance to blow out, metal jacketed gaskets are ideal for high assembly stress situations.

These gaskets are made using a thin metallic outer shell that contains a resilient filler material. The metal casing protects the filler and is resistant to pressure, temperature and corrosion. SMITH Gaskets hand-makes their metal jacketed gaskets and provides them in a variety of shapes and sizes, with a selection of metals and fillers available.

## METAL JACKETED GASKETS

Best suited to sealing flat surfaces of gas pipes, heat exchangers, cast iron flanges and autoclaves, metal jacketed gaskets can be useful when dealing with irregular or faulty flange rims.

### DOUBLE JACKETED GASKET

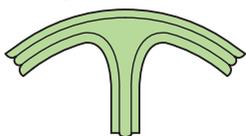


### SINGLE JACKETED GASKETS

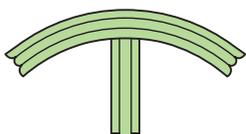


Single jacketed gaskets have one surface and both OD and ID covered by the metal jacket. Suitable for narrow flange widths in low pressure valve/pump applications.

### Integral Construction



### Welded Construction



### DOUBLE JACKETED GASKETS



Double jacketed gaskets are completely enclosed by a two piece metal covering OD, ID and both sealing surfaces. Widely used in heat exchange applications and suitable for corrosion and high temperature service.

### ORDERING INFORMATION REQUIRED

Double or single jacket: double  
 Inner diameter: 480mm  
 Outer diameters: 500mm  
 Thickness: 3.2mm  
 Jacket material: soft iron  
 Filler material: flexible graphite  
 Internal rib width: 10mm  
 Internal rib shape/position

CAMPFILES available upon request.

# COMPRESSION PACKING



Dependable sealing is crucial in many industries to ensure fluids do not interfere with machinery and materials.

## COMPRESSION PACKING



SMITH stock a complete range of manufacturers packing products and can help you find the right solution based on the conditions you are working with – size, temperature of media sealed, application (valve or pump), media and pressure.

In addition, SMITH Gaskets can also help in emergency situations and irregular sealing areas. Our aim is to provide you with enhanced performance.





Commitment to quality, innovation and service make  
SMITH Gaskets your first...and only choice.

# 03. A CUT ABOVE THE REST

SMITH Gaskets uses waterjet and laser cutting machinery providing precision cutting through Computer Numerically Controlled (CNC) equipment.



## WATER JET CUTTING SERVICES



Water jet cutting utilizes ultra-high pressure (UHP) water combined with abrasive to cut through many different materials.



### WATER JET CUTTING SERVICES

Water jet cutting uses UHP water at maximum 60,000 psi (4136 bar) combined with abrasives to cut through many different materials for highly complex shapes.

Maximum bed size is 145" (3.7m) x 75" (1.9m) providing high versatility for standard sheet sizes and nesting ability. The operating speeds from approximately 400 ipm (1m/min) for soft materials to 10 ipm (50cm/min) for harder materials, such as Stainless Steel up to 6" (150mm) thick.

The CNC output high tolerance cutting of 0.0004" (0.1mm) can be based on drawings developed in-house or to customer supplied drawings.

## LASER JET CUTTING SERVICES



When using laser cutting, a high-powered laser beam is directed onto the material which then melts, burns or vaporises, leaving a well-finished edge to the material.

### LASER JET CUTTING SERVICES

Ideal for high repeatability and high speed cutting of standard and exotic steel sheets. The fully automated CNC controlled laser provides accurate, repeatable results every time.

High precision 4 kW Laser ideal for up to 4" (100mm) steel plate. Water Assisted Cutting System (WACS™) uses an adjustable water mist to absorb heat generated by the cutting process. This results in fast cutting up to 2360ipm (60m/min) dependent upon material hardness / thickness. The machine bed utilizes standard 3m x 1.5m sheet sizes.

The CNC output high tolerance cutting of 0.0004" (0.1mm) can be based on drawings developed in-house or to customer supplied drawings.



## PLASMA CUTTING SERVICES



During plasma cutting, a mixture of compressed air and oxygen are blown out of a nozzle at high speed turning some of the gas to plasma.

### PLASMA CUTTING SERVICES

Plasma is hot enough to melt and cut through metal and moves at such a pace that the molten metal is blown away from the cut.

Our plasma cutter is fully CNC controlled, creating an accurate and taperless clean cut. With a cutting area of 6m x 2.4m, the AutoCad drawings can be created in-house or supplied by the customer.

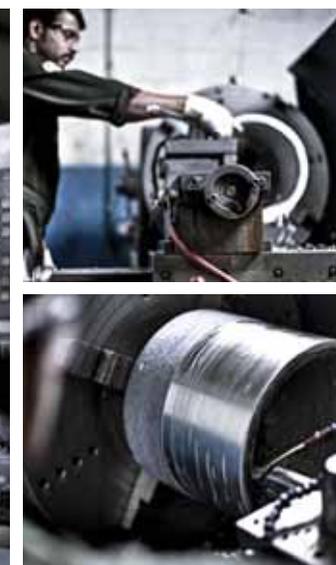
## MACHINING CAPABILITIES



Utilizing a wide, comprehensive range of CNC equipment enables SMITH Gaskets to manufacture sealing rings with low cycle times and therefore reducing manufacturing costs to a minimum.

### MACHINING CAPABILITIES

A wide range of CNC controlled equipment ensures rapid process flow and reduced cycle times. Combined with an experienced and qualified operator staff for products of varying complexity, such as IX, VX, Lens ring and other specific seal profiles.



# 04. TESTING FACILITIES

Quality lies at the core of everything we do.

The stringent quality standards set by SMITH gaskets are designed to ensure a defect-free and fully traceable product each and every time. Robust adherence to our internal quality standards, recognized by ISO9001-2008 and constantly reviewed and developed ensure our customers receive "excellence" in everything we do.

The specialized testing facility hosts several pieces of machinery designed to 'type-test' products to international and customer specifications, plus sample testing to ensure our machinery and products remain within tolerance.

This attention to detail ensures every product batch is quality approved before packaging and shipping to customers.

The equipment can be applied for testing materials across numerous industries and the SMITH facilities and inspection staff are available for external contract work.



## PMI TESTING



First class laboratory optical emission spectrometer for complete Positive Material Identification (PMI) metals analysis.

### PMI TESTING

All materials of a batch are sample tested for compliance with specifications.

Table top laboratory standard machinery is more robust and accurate than traditional mobile or hand-held PMI test machinery, providing high long term stability and lowest limits of detection.

Wavelength range 130 nm – 800 nm covering all elements providing precise analysis including grade determination.

## HARDNESS TESTING



### BENCHTOP AND PORTABLE HARDNESS TESTING MACHINE

Many grades of Stainless and Nickel alloy, corrosion resistant steels need precise conditions to forge or cast to a condition suitable for gaskets. Continued machining can work-harden them further. The requirement for soft metal RTJ rings to effectively seal within harder flanged joints requires NDT methods such as hardness and Co-ordinate Measuring Machine tests to ensure SMITH and customer specifications are met.

This combination of plasticity, combined with the load bearing ability of RTJ's means the gasket hardness is critical to the integrity of the joint assembly. Our team of metallurgists and quality control staff ensure raw material suppliers and machining specifications are written and followed for all materials.

All materials are tested for hardness within specified limits. SMITH Gaskets is one of the few gasket manufacturers, in conjunction with our suppliers, to meet the lowest hardness requirements of many applications, such as 316L stainless steel to 135 BHN and Inconel 825 to 160 BHN, amongst others. All test measurements are done using ASTM E10-08 and EN ISO 6506 (Brinell).



## COMPRESSION TESTING MACHINE



### COMPRESSION TESTING MACHINE

Type testing of gaskets ensures the nominal torque applied to the joint results in an effective seal. Both standard and low stress gaskets can be tested using this.

SMITH Gaskets compression tests spiral wound gaskets to ensure they meet the minimum requirements listed in the ASME B16.20 standards.

## TESTING EQUIPMENT



### COATING THICKNESS MEASURING GAUGE

SMITH Gaskets uses this gauge to inspect the PTFE/Zinc plating and painting thickness. Our portable gauge has an external, non-switched probe that is designed to measure coating thickness quickly, precisely and in a practical, convenient manner.

This piece of testing apparatus can be used for all types of paint, PTFE and electroplated coatings on iron and steel gaskets.

### PROFILE PROJECTOR

The Optical Comparator magnifies the silhouette of components enabling precise measurement of dimensions and geometry against prescribed limits. An important quality control tool used regularly for profile comparisons, such as Camprofile gaskets, angular measurements and profile comparisons.

## OTHER TESTING EQUIPMENT



### OTHER TESTING EQUIPMENT

SMITH gaskets climate controlled lab is used to test materials for dimensional using CMM and profile projection (Camprofile and bolts), hardness, metals analysis (PMI), compression and impact testing to international standards. These testing services are available for our customers.

Please contact us for more details.

## NON-DESTRUCTIVE TESTING



### NON DESTRUCTIVE TESTING

ASNT level II certified technicians employ a number of non destructive testing techniques used in both scientific and industrial works.

The methods used by SMITH Gaskets includes: visual, liquid penetrant inspection (LPI), magnetic particle inspection (MPI) and ultrasonic testing.



A close-up photograph of a male worker wearing safety glasses and a dark jacket. He is focused on his work, using a tool to work on a metallic part. The background is dark with bright, out-of-focus light sources, suggesting an industrial or testing facility environment. The image is split into two vertical panels.

SMITH Gaskets meets quality certification to  
ISO9001-2008 and holds API Licenses 6A and 17D.



# SMITH Gaskets

Smith International Gulf Services, LLC

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