

## ■ Certificates



## ■ The Kian Washer Shargh Co. Gasket Manufacturer

The pressing need to equipment such as oil, gas, petrochemical, and power plant encouraged us to concentrate on activities related to production of the equipment. In 2011, some of the specialists of petroleum equipment industry established the Kian Washer Shargh Co. in order to manufacture equipment in the field of oil, gas, petrochemical, and power plant.

This company enjoys a great deal of advantages including:

- Having expert and suitable human resources with scientific knowledge with more than ten years' experience in producing gaskets;
- Using full automatic machinery made in Italy;
- Exact planning for goods delivery on time;
- Full monitoring of production process.

The above-mentioned qualities have increased the quality of products according to international valid standards, having increased customers' satisfaction. We can manufacture diverse industrial washers, including spiral wound, ring type joint, metal jacketed, soft cut gaskets, and non-standard gaskets in various designs and sizes.

## ■ PRODUCTION STANDARDS

Kian Washer Shargh Co. is producing and supplying following items in accordance with international standards:

- 1- Spiral Wound Gaskets based on standards of ASME B16.20, API 601, BS 3381.
- 2- Double Jacketed Gaskets based on standards of ASME B16.20 and API 601
- 3- Ring Joint Gaskets based on standard of ASME B16.20
- 4- Non-Metallic Gaskets based on standard of ASME B16.21

## ■ FEATURES

Capability of manufacturing different types of O-rings, Sheets



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کیان واشتر شارق  
تولید کننده انواع واشرهای صنعتی  
**KIAN WASHER SHARGH**



### ■ The Gasket

A gasket is a compressible material, or a combination of materials, which when clamped between two stationary members prevents the passage of the media across those members.

The gasket material selected must be capable of sealing mating surfaces, resistant to the medium being sealed, and able to withstand the application temperatures and pressures.

### Considerations For Gasket Selection

Many factors should be considered when selecting a gasket to ensure its suitability for the intended application. Gasket properties as well as flange configuration and application details are part of the selection process.

### ■ Gasket Selection

Gaskets can be classified into three categories: soft cut, semi-metallic and metallic types.

The physical properties and performance of a gasket will vary extensively, depending on the type of gasket selected and the materials from which it is manufactured.

Physical properties are important factors when considering gasket design and the primary selection of a gasket type is based on the following:

- Temperature of the media to be contained
- Pressure of the media to be contained
- Corrosive nature of the application

### Semi-metallic

These are composite gaskets consisting of both metallic and non-metallic materials. The metal provides the strength and the resilience of the gasket and the non-metallic component provides the conformable sealing material. These gaskets are suitable for low and high pressure and temperature applications. A wide range of materials is available. Types: Spiral Wound Gaskets & Metal Jacketed Gaskets.




### ■ Spiral Wound Gasket

A requirement of any gasket is the ability to recover under variable loads. The effects of pressure and temperature fluctuations, the temperature difference across the flange face, along with flange rotation, bolt stress relaxation and creep, demand a gasket with adequate flexibility and recovery, to maintain a seal under variable working conditions. The spiral wound gasket, invented by KWS meets these requirements. 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. Normal practice is to reinforce the inner and outer diameters with several plies of metal without fillers. This engineered product is "tailor made" to be compatible with the flange closure in which it is to be used.

Semi-metallic gaskets can be manufactured from a range of filler materials according to different service conditions :

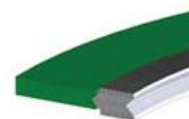
Filler Material	Maximum Temperature	ASME B16.20 Colour Coding
Graphite	550° C	Grey Stripe
PTFE	260° C	White Stripe
Mica	1000° C	Light Green Stripe
Mica and Graphite	900° C	

Winding Material	Maximum Temperature	ASME B16.20 Colour Coding
Carbon Steel	500° C	Silver
304 Stainless Steel	650° C	Yellow
316L Stainless Steel	800° C	Green
Duplex UN S31803	800° C	N/A
347 Stainless Steel	870° C	Blue
321 Stainless Steel	870° C	Turquoise
Monel 400	800° C	Orange
Nickel 200	600° C	Red
Titanium Gr 2	500° C	Purple
Inconel 600	1000° C	Gold
Inconel 625	1000° C	Gold

### ■ Spiral Wound Gasket

#### STYLE CS

Utilises an external ring which accurately centres gasket on flange face; provides additional radial strength to prevent gasket blowout and acts as a compression stop. A general purpose gasket suitable for use with flat face and raised face flanges. Where space is limited it may be possible to provide a spiral wound outer ring for proper centering; consult KWS Engineering for more information.



#### STYLE CSI

Incorporates an inner ring to the Style CS which provides an additional compression stop and additional blowout resistance, prevents build-up of process fluid, minimises erosion and turbulence, shields the gasket, and prevents inward buckling of the gasket. Suitable for use with flat face and raised face flanges and specified for high pressure/temperature service or where corrosive or toxic media are present.





Note on use of inner rings: ASME B16.20, which covers spiral wound gaskets, requires the use of solid metal inner rings in:

- Pressure Class 900, nominal pipe sizes 24" and larger
- Pressure Class 1500, nominal pipe sizes 12" and larger
- Pressure Class 2500, nominal pipe sizes 4" and larger
- All PTFE filled gaskets
- Inner rings for flexible graphite filled spiral wound gaskets shall be furnished unless the purchaser specifies otherwise.

KWS also recommends the use of inner rings for the following applications:

- Vacuum service or suction side of rotary equipment such as pumps and compressors
- Aggressive media, high pressure or temperature
- Surface finishes smoother than 125 Ra
- If over compression of the gasket is a concern.

It is customary to select inner ring material to be the same as the metal winding.



#### STYLE S

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



#### STYLE SI

Solid inner metal ring acts as a compression stop and fills the annular space between flange bore and the inside diameter of the gasket. Designed to prevent accumulation of solids, reduce turbulent flow of process fluids and minimise erosion of flange faces. Suitable for male and female pipe flanges.



#### STYLE HE

Style HE gaskets are used for heat exchangers where pass bars may be required. The outer portion is of standard spiral wound construction, whereas the pass bar is normally of single or double jacketed style, securely fastened to the I.D. of the spiral wound portion.



#### STYLE HE-CS

This style is identical to the Style HE, except that it is fitted with an outer guide ring. Note: Style HE and Style HE-CS gaskets have a primary seal of spiral wound construction with its inherent resiliency and excellent sealing quality. It is necessary that dimensional drawings locating the pass bar and the configurations be submitted for all inquiries and orders for these style gaskets.



#### STYLE HE-CSI WITH SPIRAL WOUND OUTER RING

The Style HE-CSI is a variation of the style CSI 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 KWS Technical Department for minimum cross sectional width of solid metal outer ring.

#### ■ MAXIPROFILE

The KWS Maxiprofile is a composite gasket which utilises a serrated metal core with a soft facing material.

The metal core is a machined on each contact face with concentric serrations which provide high pressure areas, ensuring that the soft coating flows into any imperfections in the flange even at relatively low bolt loads.

The result is a gasket which combines the benefits of soft cut materials with the advantages of seal integrity associated with metallic gaskets.

#### Filler Material

Expanded graphite is the most common facing material used for Maxiprofile gaskets. However, other materials can be used, such as PTFE for chemically aggressive duties or mica for high temperature duties.

Facing Material	Maximum Temperature
Graphite	550°C
PTFE	260°C
Mica	1000°C

Maxiprofile gaskets can also be manufactured from a range of core materials according to media compatibility and temperature considerations.

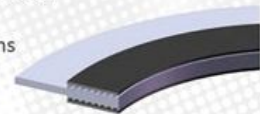
Core Material	Maximum TEMPERA
316L Stainless Steel	800°C
304 Stainless Steel	650°C
347 Stainless Steel	870°C
321 Stainless Steel	870°C

#### General Properties of Maxiprofile Gaskets:

- A wide range of seating stresses under which the seal is effected and maintained
- Can be used when there is insufficient bolt load to seal conventional gasket materials
- Easy to handle and fit
- Suitable for a wide range of operating conditions
- The soft facing layer prevents damage to the mating flange
- Sealing is not sensitive to uneven bolt loading conditions
- Can be refurbished with a new facing layer and reused

#### Applications of Maxiprofile Gaskets:

- Heat exchanger and vessel applications
- High and low temperatures
- Pressures of up to 250 bar
- Low bolt loads
- Narrow flange widths
- Damaged flanges





## ■ Metal Jacketed Gasket

Metal Jacketed Gaskets, as the name suggests, consist of a metallic outer shell with either a metallic or non-metallic compressed fibre filler. The filler material gives the gasket resilience, while the metal jacket protects the filler and resists pressures, temperatures and corrosion. A wide range of materials are available to suit specific temperature and corrosive conditions.

Metallic		Non-Metallic:
Soft Iron	Nickel	PTFE
Carbon Steel	Aluminum	Graphit
Stainless Steel	Brass	Ceramic
Inconel®	Copper	
Monel®	(Other materials on request)	



Metal Jacketed Gaskets are available in a wide range of sizes and configurations. They are traditionally used for heat exchanger applications, pumps, and valves, however the resilience and recovery properties of these gaskets are limited. Metal Jacketed Gaskets require smooth flange surface finishes, high bolt loads, and flange flatness in order to seal effectively.



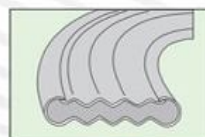
## ■ DOUBLE JACKETED GASKETS (Styles KWS100, KWS 101, KWS 102)

The filler material is completely enclosed by a two piece metal jacket, which covers both the inside and outside diameters and both contact surfaces. Style 101 is similar to Style 100 with the exception that the metal jacket is formed from a corrugated jacket providing better resilience than the Style 100, since the corrugations form multi-seals across the flange sealing face. Style 102 is a double shell gasket constructed of two reversed wrap-round shells. This provides handle ability and better resistance to high pressures.

Double Jacketed Gaskets are used in boiler and heat exchanger applications when ample bolting is available to correctly seat the gasket. They are designed for high pressure and temperature applications up to and inclusive of Class 900. The temperature limitation of the gasket is dictated by the combination of metallic and non-metallic materials used in its construction. Gasket widths as narrow as 5/16" (8mm) can be manufactured dependent on diameter. Very large gasket diameters can also be produced. Nominal gasket thickness is 1/8" (3.2mm). Gaskets can be manufactured with either integral or welded pass partition bars, in a variety of complex configurations.



KWS 100



KWS 101



KWS 102

## Metallic

### ■ Ring Type Joint (rTJ)



The ring type joint was initially developed for use in the petroleum industry, where high pressure/temperature applications necessitated the need for a high integrity seal. They are mainly used in the oil field on drilling and completion equipment. Ring type joints are also commonly used on valves and pipework assemblies, along with some high integrity pressure vessel joints.

Type ring joint Gasket : R, RX, BX . All ring type joints are manufactured in accordance with API 6A and ASME B16.20

### Common Materials

Material	Brinell Hardness	Temperature Limitation	Identification
Soft iron	90	-60 to +400°C	D
Low carbon steel	120	-40 to +500°C	S
4%-6% Cr 1/2% Mo: F5	130	-125 to +500°C	F5
Stainless steel 304	160	-250 to +650°C	S304
Stainless steel 316	160	-110 to +800°C	S316
Stainless steel 321	160	-250 to +870°C	S321
Stainless steel 347	160	-250 to +870°C	S347
Stainless steel 410	170	-20 to +500°C	S410
Inconel 625	-	1000°C	625
Incoloy 825	-	1000°C	825

A number of ring joint styles are available designed for specific flange types, these are:

Type	Nominal Pipe Size	Class Ratings
Type R Oval and Octagonal	1/2" to 24"	300 to 900 ASME B16.20 Series A
	26" to 36"	150 to 2500 ASME B16.20
	1 1/2" to 20"	API 6A
Type RX	1 1/2" to 24"	720 to 5000 ASME B16.20
	26" to 36"	300 to 900 ASME B16.20 Series A
	1 1/2" to 20"	API 6A
Type BX	1 11/16" to 21 1/4"	5000 to 20000 ASME B16.20

### ■ Soft Cut

Sheet materials are used in low to medium pressure services. With careful selection these gaskets are not only suitable for general service but also for extreme chemical services and temperatures.

Types : Compressed Fibre Sheets, PTFE, Graphite Insulating Gaskets.





## ■ Soft Cut Gaskets

With the shift to soft cut gaskets, gasket manufacturers have developed a myriad of products. Some of the initial materials developed proved inferior to their predecessors in regard to temperature, chemical resistance, creep resistance and sealing characteristics.

KWS Capability of manufacturing standard soft-cut gasket from ½ to 60 inch and Non-standard soft gasket.

KWS ability to supply a wide range of compressed fibre gasket sheet. Some of these sheets have been fibre reinforced grades, manufactured by the traditional calendering or sheeter process. Other product ranges are fibre-free and some of these materials have exceptionally good properties.



## ■ Insulating Sets

Insulating sets comprise of a phenolic laminate or neoprene faced phenolic laminate gasket (Style NCA and NCB only) which is located between the flange sealing faces, phenolic laminate bolt sleeves, two insulating washers per bolt for maximum protection and two plated mild steel washers per bolt. Stainless steel washers can be supplied upon request.

Insulating sets are essentially used for pipeline flange corrosion protection, where a seal is required between dissimilar flange materials. The use of dissimilar metallic flanges with a conductive gasket material accompanied with a suitable electrolyte may set up a galvanic cell which will corrode the anodic metal. Insulating sets are also used to electrically isolate flange joints, preventing the flow of electrostatic charge along pipelines.



## TYPICAL APPLICATIONS

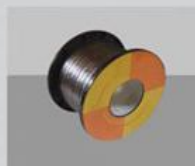
Offshore installations, sea water environments, hydrocarbon service, chemical installations, oil refining pipelines requiring galvanic corrosion protection and electrical insulation.

## ■ Compression Packings

Compression Packings are used to provide an effective sealing function in valve, rotary and reciprocating pump applications.

KWS Gasket Compression Packings are produced using the highest quality raw materials and are available in a wide range of combinations to suit many different service applications.

- Braided packings manufactured from a range of yarns
- Pre-formed graphite rings - high temperature sealing elements formed from high purity exfoliated graphite foil
- Syntron packings - extruded packings formed from a fiber reinforced, rubber bound composite.

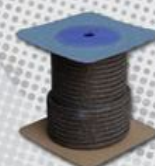


### Graphite Packings

Packing made of expanded graphite yarn, specially reinforced. Recommended for use in fittings at very high temperatures and highest pressures, in contact with water, steam water, oils, solvents, acids and alkalis except for strong oxidants.

### PTFE Packings

Packing made of pure PTFE yarn, without any lubricants. It is recommended for static applications and at low speed.



**KIAN WASHER SHARGH™**  
Industrial Gasket Manufacturer



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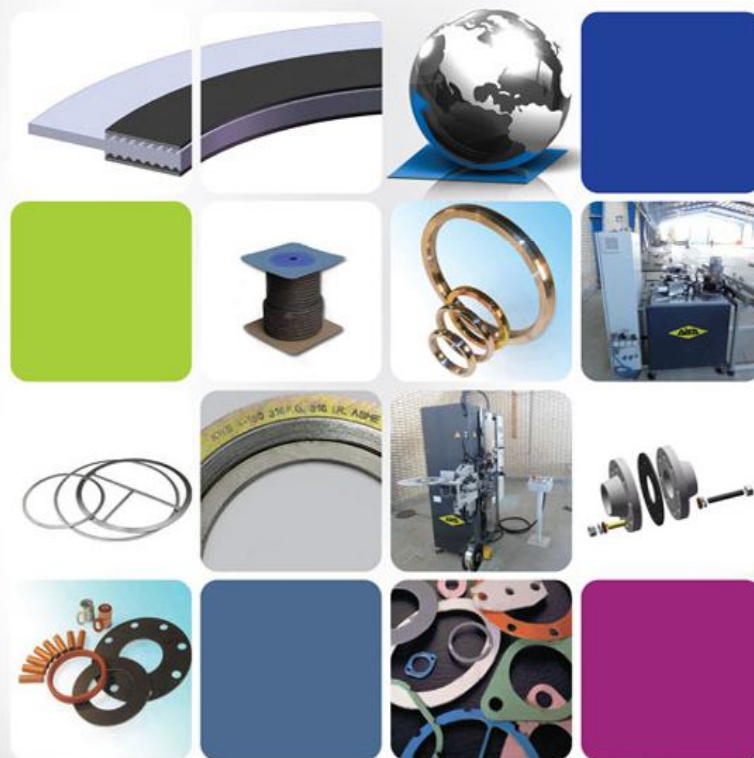


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