

# Sealing Gaskets

GasketSeal® Sealing Gaskets  
LineBacker® Sealing Gaskets  
LineBacker® Zero™, 250™ & 251™ Sealing Gaskets  
FlangeMate® Sealing Gaskets  
Custom Sealing Gaskets



PSI is a world leader in the technology used to seal pipelines, piping systems, pressure vessels or any mating surfaces in any size or configuration. With over 35 years experience in providing gaskets for industry, PSI is uniquely positioned to provide effective solutions for specialized or exotic fluids or for applications subject to extreme temperature and pressure fluctuations. Manufacturing facilities are located in the United States and Europe, with sales and service facilities located worldwide.



## PSI sealing gaskets far exceed the sealing capabilities of flat gaskets. Here's why....

PSI sealing gaskets consist of a sealing element positioned within a groove on opposite sides of a retainer. Elastic memory characteristics of the confined sealing elements result in near zero  $m$  and  $y$  factors making it possible to effect a positive seal without the tremendous bolt loads that are required to crush flat gaskets into a configuration capable of producing a marginal seal, at best.

$Y$  = Compressive load necessary to effect a seal.

$M$  = Extra load (above  $Y$  factor) necessary to hold fluid pressure over the operational pressure range of the system.

Near zero  $m$  and  $y$  factor sealing gaskets can be used to effectively seal mating surfaces made from glass, plastics, ceramics and other materials that would tend to shatter when over compressed. When used with flanged piping systems, lower bolt torques and lighter weight, lower pressure rated flanges may be used, resulting in additional material and installation savings.

### Sealing Gaskets for Zero Fugitive Emissions

LineBacker<sup>®</sup> Zero<sup>™</sup>, LineBacker<sup>®</sup> 250<sup>™</sup> and LineBacker<sup>®</sup> 251<sup>™</sup> are three gaskets using proprietary materials to provide a substitute for asbestos gaskets. They address the regulations associated with fugitive emissions, requirements that are closely monitored and highly sensitive to regulatory agencies today.

### Lower bolt torques required to effect a seal.

Reduction in installation time and the need for impact wrenches or cheater bars.

Eliminates the need for retightening due to flat gasket cold flow.

Reduces the need for high tensile strength bolts or studs.

Permits the use of lighter weight or lower ANSI rated flanges.

Assures a positive seal first time, every time while eliminating costly delays to tighten leaking flanges during initial pressurization.

### Pressure energized, controlled confinement of PSI sealing elements.

Sealing elements maintain contact with mating surfaces even though the surfaces may tend to warp or separate due to thermal shock, pressure fluctuations or other external forces.

Internal fluid pressure forces the seal elements against the mating surfaces increasing the effectiveness of the seals.

### Micro-encapsulation of seal elements.

Micro-exposure to either external or internal environments serves to shield seal elements from fire, chemicals, corrosive fluids or anything that would tend to destroy their effectiveness.

Micro-exposure to external or internal environments protects seal elements from deterioration by atmospheric conditions or

internal media and dramatically lengthens the service life of the gasket.

### Match gasket materials to service conditions.

Sealing elements may be made of a broad selection of elastomers.

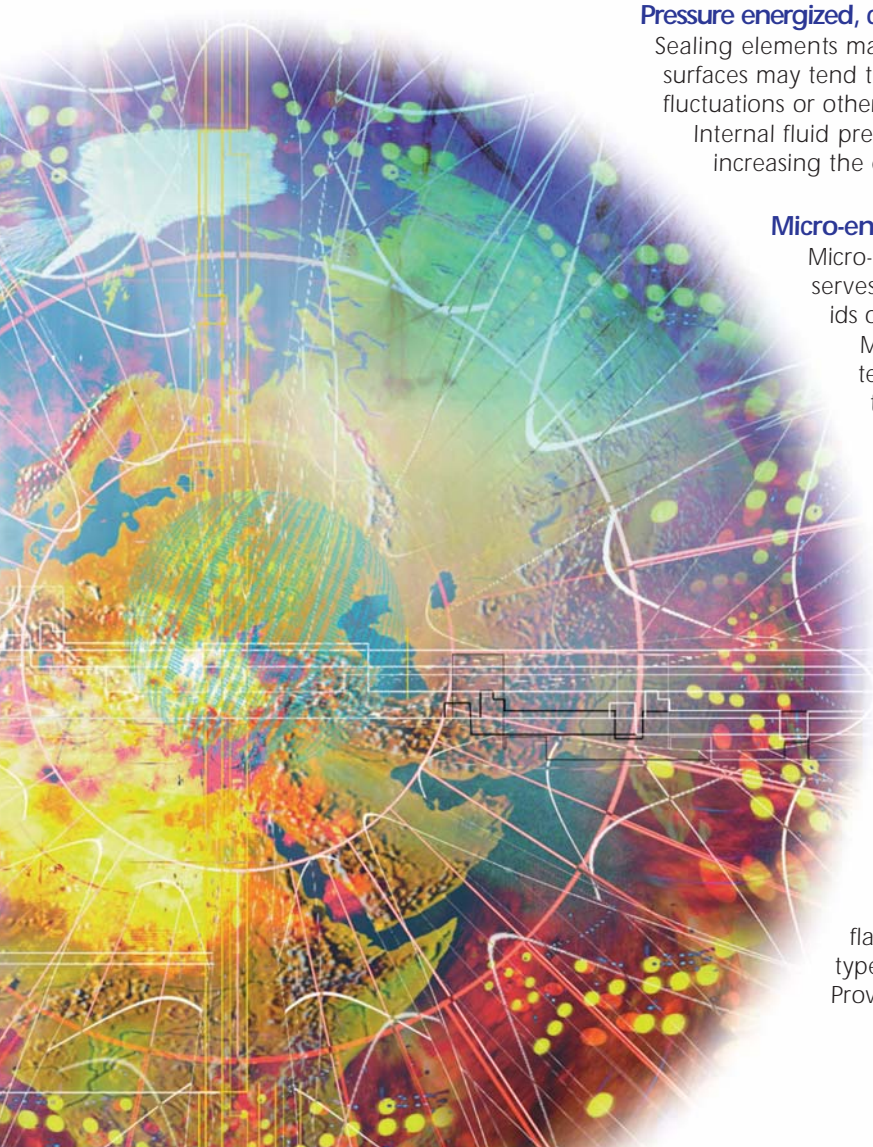
Retainers may be made of a variety of dielectric materials or metals.

With a choice of retainer and sealing materials in any combination, PSI sealing gaskets may be tailored for use with media that falls within the limitations of the elastomer used for the seal and the retainer material.

### Sealing elements may be positioned anywhere between the I.D. of the gasket and the I.D. of the bolt circle.

Allows the ability to use PSI sealing gaskets with ring joint, flat face, raised face or any combination of these flange types in a given size and pressure rating.

Provides the option of having two or more sealing



## Solve these common flat gasket problems with PSI sealing gaskets...

### **Flat Gasket Problem:** **Embedment Relaxation**

Microscopic high spots, a characteristic associated with new nuts and washers, are overloaded beyond the yield point and relax with excessive bolt tightening. Retightening can only partially compensate for this relaxation.

### **Sealing Gasket Solution**

PSI sealing gaskets do not require the high torque loads required to seal a flat gasket and therefore reduce stress on nuts and washers.

### **Flat Gasket Problem:** **Vibration & Hammering**

Vibration can cause a slow loosening of bolts resulting in potential leaks. Water hammering type actions are similar but more sudden and short in duration.

### **Sealing Gasket Solution**

Leaks due to bolt loosening can be reduced by pressurized energized sealing elements. As the mating surfaces separate, controlled confinement of the sealing elements results in a seal that will maintain positive contact against the mating surfaces.

### **Flat Gasket Problem:** **Differential Thermal Expansion**

Flanges, gaskets and bolts expand at different rates as external or process fluid temperatures change, potentially creating increased loads on gaskets. The extra load compresses gaskets over initial assembly specifications, but as temperatures cool, load is reduced. Flat gaskets are not fully elastic and can't return to the initial compressed thickness resulting in leaking flanges.

### **Sealing Gasket Solution**

Controlled confinement of the sealing elements results in a seal that should maintain positive contact against the flange faces during thermal expansion and contraction. In addition, internal pressure energizes the sealing elements, forcing them against the mating surfaces, increasing the effectiveness of the seals.

### **Flat Gasket Problem:** **Gasket Creep**

Flat gaskets deform and creep or cold flow when subjected to the high loads necessary to create a seal. While flat gaskets have reasonable loading curves, they exhibit steep unloading curves. The resultant loss in bolt torque may cause in a flange leak.

### **Sealing Gasket Solution**

PSI retainers and sealing elements exhibit high recovery rates, reducing the effects of gasket creep and

### **Flat Gasket Problem:** **Gasket Porosity**

Most gaskets contain pores through which hazardous fluids can flow.

### **Sealing Gasket Solution**

PSI LineBacker Zero gaskets utilize proprietary retainer materials that allow zero permeability and therefore zero fugitive emissions. Tested in accordance to DIN-3535 with resultant 0.00cm<sup>3</sup>/min gas permeability, PSI LineBacker Zero, 250 and 251 gaskets are 100% reliable even when subjected to high temperatures (up to 220 F. [104 C.]) and pressures.

### **Flat Gasket Problem:** **Elastic Interactions**

Elastic interactions occur between studs and joint members as studs are tightened. Because it is impossible to tighten all bolts uniformly at the same time, the greatest pressure is extended on the area directly around the bolts being tightened.

### **Sealing Gasket Solution**

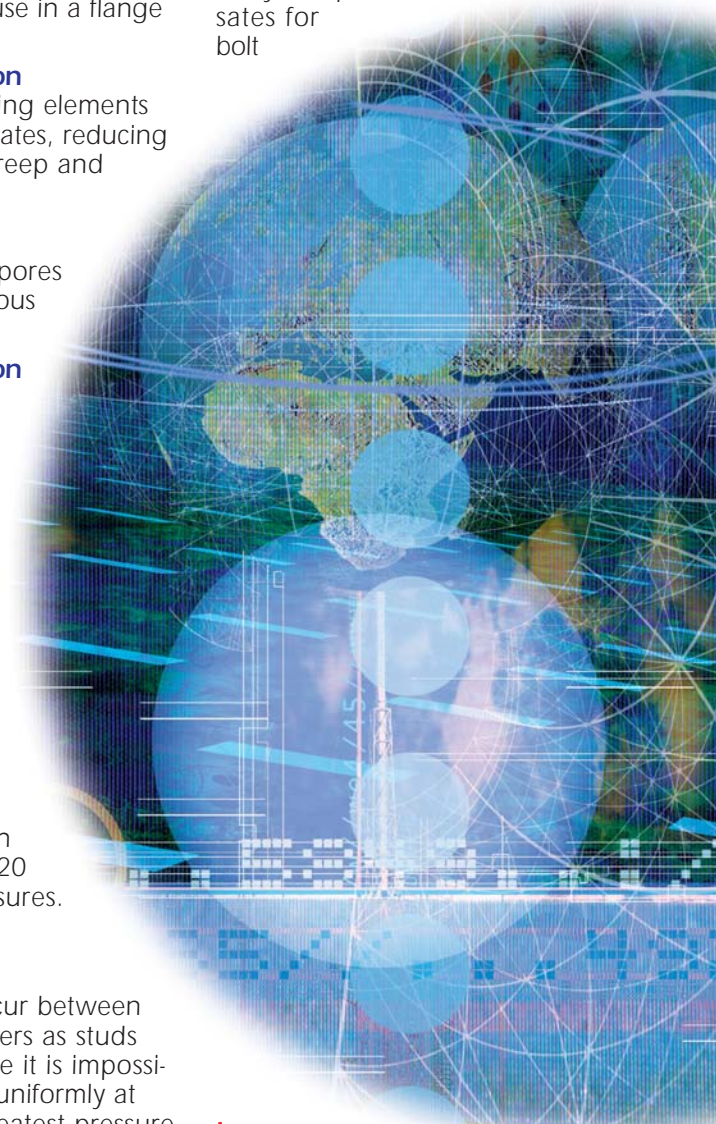
High compressive load retainers and high unit load seal elements can significantly reduce the effects of gasket elastic interaction.

### **Flat Gasket Problem:** **Bolt Creep**

Usually associated with high temperatures, bolt creep results in a reduction in bolt tension with relaxation over time.

### **Sealing Gasket Solution**

PSI sealing gaskets have significantly less creep relaxation, which normally compensates for bolt



### **Improper Installation**

While it is impossible to guarantee the correct installation of any gasket, PSI sealing gaskets are shipped with full installation instruction and bolt tightening chart. In addition, technical service is available for all PSI sealing gaskets by simply calling 1-800-423-2410.

# GasketSeal<sup>fi</sup> Sealing Gaskets

GasketSeal sealing gaskets are considered to be one of the most effective methods for sealing mating surfaces of all types. The gasket consists of two molded half O rings (with precise crown to void ratio) mounted in grooves on opposite sides of a retainer. While maintaining all the advantages of a full O ring seal, the half O rings eliminate the need for sealing grooves in the mating surfaces which also eliminates positioning and alignment concerns. GasketSeal gaskets are available in a wide variety of retainer and sealing element combinations for matching gaskets to service and environmental conditions.

## Sizes

All standard ANSI and API flange sizes from 1/2 and above.  
Custom odd sizes and shapes.

## Pressure Ratings

All ANSI and API rated flanges.  
Pressures from hard vacuum to 50,000 psi and higher.

Metal Retainer Materials	Insulating Retainer Materials	Sealing Elements
Aluminum	Ceramic	Buna-N (Nitrile)
Brass	Epoxy Glass	Buna-S
Carpenter 20	Glass	Butyl
Carbon Steel	Lucite	EPDM
Cast Iron	Melamine	Hypolon
Clad Steel Materials	Phenolic	Natural Rubbers
Copper	Polyester Glass	Neoprene
Ductile Iron	Polyethylene	Nylon
Hastelloy B	Silicone Glass	Polyurethane
Hastelloy C	Vinyl	Silicone Rubber
Hastelloy X		Viton <sup>fi</sup>
Inconel X		
Monel		
Nickel 200		
Soft Iron		
Stainless Steel		
Tantalum		<sup>fi</sup> DuPont
Tin		
Titanium		
Vanadium		



## Before Tightening

The flange faces come into contact with the crown of the sealing elements. As the flange is tightened the crowns are compressed into the molded-in voids in the sealing elements, resulting in a seal that will maintain positive, dynamic contact against the flange faces under all conditions.



## After Tightening

The flange faces have come into firm contact with the retainer, thus encapsulating the sealing elements within grooves and guarding them from exposure to external environments or internal media. At the same time, the elastic memory characteristics of the confined sealing elements results in zero m and y factors, making it possible to effect and maintain a positive seal at the lowest possible compressive load.



## Suggested Sealing Gasket Material Compatibility

Medium	Retainer	Seal	Temp. Range F	Temp. Range C
Acetone	Phenolic	Nitrile	+32 to +80	0 to +27
Air	G-10	Nitrile	-65 to +225	-54 to +107
Carbon Dioxide	G-10	Nitrile	+32 to +150	0 to +66
Ethanol	G-10	Nitrile	+32 to +100	0 to +38
Fuel Oil	G-10	Viton	-20 to +280	-29 to +138
Gas, Natural	Phenolic	Nitrile	-65 to +220	-54 to +104
Gas, Sour	Phenolic	Viton	-20 to +220	-29 to +104
Hydrogen	G-10	Nitrile	-65 to +250	-54 to +121
Jet Fuel	G-10	Viton	-20 to +225	-29 to +107
Nitrogen	Phenolic	Nitrile	-65 to +220	-54 to +104
Oil, Crude	G-10	Viton	-20 to +280	-29 to +138
Propane	G-10	Nitrile	+32 to +80	0 to +27
Propylene	G-10	Viton	+32 to +80	0 to +27
Sewage	G-10	Viton	-20 to +280	-29 to +138
Tolulene	G-10	Viton	+32 to +150	0 to +66
Water (hot)	G-10	Nitrile	+175 to +250	+79 to +121
Water (Potable)	G-10	Nitrile	+32 to +250	0 to +121
Water (Sea)	G-10	Nitrile	+32 to +250	0 to +121

### General Notes:

The foregoing performance data are intended as guidelines only. Performance suitability for any specific applications should be determined by the user. Variation in temperature, pressure, concentration or mixtures acting synergistically may preclude suggested service use. Material selection is at the sole risk of the user. Consult with a specialist or PSI factory for specific applications. PSI's responsibilities will be limited to those listed in the PSI standard warranties.

### Metal Retainers:

GasketSeal gaskets are available with a wide range of metal retainers to offer compatibility with flange metals, for extremely

## Common LineBackerfi & GasketSealfi Sealing Gasket Physical Properties

ASTM	Test Method	Plain Phenolic	Neo-Faced Phenolic	G-3 Hi-Temp Phenolic	G-7* Silicone/Glass	G-10 Epoxy/Glass	G-11 Epoxy/Glass
D149	Dielectric Strength Vdts/Mil (Short Time)	500	500	550	350-400	550	550
D695	Compressive Strength (psi)	25,000	25,000	50,000	40,000	50,000	50,000+
D229	Water Absorption (%)	1.6	1.6	0.7	0.07	0.10	0.10
D257	Insulation Resistance Meg Ohms	40,000	40,000	46,000	2,500	200,000	200,000
D790	Flexural Strength (psi)	22,500	22,500	60,000	27,000	60,000	75,000+
D785	Hardness Rockwell M	85	85	115	105	115	115
D256	IZOD Impact Strength (Ft-Lbs/Inch)	1.2	1.2	12.0	8.0	14.0	12.0
D638	Tensile Strength (psi)	20,000	20,000	42,000	25,000	45,000	43,000
D732	Shear Strength (psi)	10,000	10,000	18,000	20,000	22,000	22,000
Cryogenic	Temperature Range (Degrees F)	-65 to +220	-65 to +175	-65 to +392	Cryogenic to +450	Cryogenic to +280	Cryogenic to +349
Cryogenic	Temperature Range	-54 to +104	-54 to +79	-54 to +200	Cryogenic	Cryogenic	

## Seal Element Temperature Limits

	Nitrile	Viton	Teflon	Neoprene	EPDM
Degrees Farenheit	-65 to +250	-20 to +350	Cryogenic to +450	-40 to +175	-65 to +300
Degrees Celsius	-54 to +121	-29 to +177	Cryogenic to +232	-40 to +79	-54 to +149

# LineBacker<sup>fi</sup> Sealing Gaskets

LineBacker<sup>fi</sup> sealing gaskets utilize a patented rectangular sealing element, referred to as a quad ring, in combination with a unique groove design to effectively seal and isolate flanges of all types. With the unique quad ring design, elastic memory is provided for elastomers not normally associated with this characteristic. Materials such as polyimide, TFE (Teflon) and vinyl may be used as sealing elements which dramatically increases the options available for matching gasket materials to service and environmental conditions.

LineBacker gaskets are available in a wide variety of retainer and sealing element combinations for matching gaskets to service and environmental conditions. This greater variety of materials also provides excellent temperature and chemical range compatibility.

## Sizes

All standard ANSI and API flange sizes from 1/2 and above.  
Custom odd sizes and shapes.

## Pressure Ratings

All ANSI and API rated flanges.  
Pressures from hard vacuum to 50,000 psi and higher.

Metal Retainer Materials	Insulating Retainer Materials	Sealing Elements
Aluminum	Ceramic	Buna-N (Nitrile)
Brass	Epoxy Glass	Buna-S
Carpenter 20	Glass	Butyl
Carbon Steel	Lucite	EPDM
Cast Iron	Melamine	Hypolon
Clad Steel Materials	Phenolic	Kel-F
Copper	Polyester Glass	Natural Rubbers
Ductile Iron	Polyethylene	Neoprene
Hastelloy B	Polyphenol Ether	Nylon
Hastelloy C	Pyrox	Polyimide
Hastelloy X	Silicone Glass	Polyurethane
Inconel X	Vinyl	Silicone Rubber
Monel		Teflon <sup>fi</sup>
Nickel 200		Vinyl
Soft Iron		Viton <sup>fi</sup>
Stainless Steel		
Tantalum		
Tin		
Titanium		
Vanadium		<sup>fi</sup> DuPont



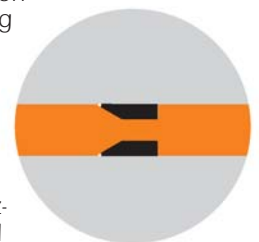
## Before Tightening

The flange faces come into contact with the sealing elements, which extend slightly above the surface of the retainer. As the flange is tightened the sealing elements are compressed and move sideways into the inclined portion of the groove, developing a high unit pressure against the flange faces.



## After Tightening

The flange faces have come into firm contact with the retainer, thus encapsulating the sealing elements within grooves. At the same time, the unique LineBacker seal configuration provides elastic memory for elastomers not normally associated with this characteristic - resulting in a simple flat gasket with extremely high loading and self energizing characteristics without adverse cold flow problems.



## Suggested Sealing Gasket Material Compatibility

Medium	Retainer	Seal	Temp. Range F	Temp. Range C
Acetone	Phenolic	Nitrile	+32 to +80	0 to +27
Air	G-10	Nitrile	-65 to +225	-54 to +107
Ammonia Dry	G-10	Teflon	-65 to +220	-54 to +104
Ammonia (Wet)***	G-10	Teflon	+32 to +100	0 to +38
Bleach	G-10	Teflon	+32 to +80	0 to +27
Butylene (Butadiene)	G-10	Teflon	+32 to +100	0 to +38
Carbon Dioxide	G-10	Nitrile	+32 to +150	0 to +66
Caustic Soda (NaOH)	G-10	Teflon	-65 to +225	-54 to +107
Cryogenic	G-10	Teflon	-300 to +280	-184 to +138
Ethanol	G-10	Nitrile	+32 to +100	0 to +38
Ethylene (Ethene)	G-10	Teflon	+32 to +80	0 to +27
Fuel Oil	G-10	Viton	-20 to +280	-29 to +138
Gas, Natural	Phenolic	Nitrile	-65 to +220	-54 to +104
Gas, Sour	Phenolic	Viton	-20 to +220	-29 to +104
Gasoline	G-10	Teflon	-65 to +225	-54 to +107
Hydrogen	G-10	Nitrile	-65 to +250	-54 to +121
Jet Fuel	G-10	Viton	-20 to +225	-29 to +107
LNG	G-11	Teflon	-300 to +100	-184 to +38
Mercaptan	G-10	Teflon	-20 to +80	-29 to +27
Methanol	G-10	Teflon	+32 to +100	0 to +38
MTBE	G-10	Special Nitrile	+32 to +80	0 to +27
Nitrogen	Phenolic	Nitrile	-65 to +220	-54 to +104
Oil, Crude	G-10	Viton	-20 to +280	-29 to +138
Oxygen**	G-10	Teflon	-65 to +250	-54 to +121
Pentane	G-10	Teflon	+32 to +80	0 to +27
Propane	G-10	Nitrile or Teflon	+32 to +80	0 to +27
Propylene	G-10	Viton	+32 to +80	0 to +27
Sewage	G-10	Viton	-20 to +280	-29 to +138
Spent Liquor	G-10	Teflon	+32 to +100	0 to +38
Steam*	G-7*	Teflon	To +450	To +232
Steam	G-3	Teflon	To +392	To +200
Steam*	Yellow Jacket	No Seal	To +450* or (+392)	To +268* or (+200)
Styrene	G-10	Teflon	+32 to +80	0 to +27
Sulphur (Molten)	G-10	Teflon	+32 to +280	0 to +138
Toluene	G-10	Viton or Teflon	+32 to +150	0 to +66
Water (hot)	G-10	Nitrile	+175 to +250	+79 to +121
Water (Potable)	G-10	Nitrile	+32 to +250	0 to +121
Water (Sea)	G-10	Nitrile	+32 to +250	0 to +121
White Liquor	G-10	Teflon	+80 to +280	+27 to +138

\* = G-7 material should not be used with hydrocarbons, not even trace amounts.

\*\* = These are organic materials that will feed a fire if a leak occurs and an ignition source exists.

\*\*\* = Ammonia (wet) - Data to +100 F (+38 C) only (same materials as dry).

### General Notes:

The foregoing performance data are intended as guidelines only. Performance suitability for any specific applications should be determined by the user.

Variation in temperature, pressure, concentration or mixtures acting synergistically may preclude suggested service use.

Material selection is at the sole risk of the user. Consult with a specialist or PSI factory for specific applications.

PSI's responsibilities will be limited to those listed in the PSI standard warranties.

### Metal Retainers:

LineBacker gaskets are available with a wide range of metal retainers to offer compatibility with flange metals, for extremely hazardous fluids or for extremes in temperatures and pressures.

# LineBacker<sup>fi</sup> Zero, 250 & 251 Sealing Gaskets

Significant chemical and material composition improvements have provided an opportunity for the development of three gaskets, designed to address the regulations associated with asbestos substitute gaskets and fugitive emissions.

LineBacker Zero, LineBacker 250 and LineBacker 251 gaskets are manufactured from new proprietary materials that provide excellent resistance against environmental leakage without the health hazards associated with asbestos type gaskets.

In addition to providing zero environmental leakage, this new line of sealing gaskets:

- Eliminate flange leaks
- Guard against blowouts
- Protect against hostile environments and fire
- Resolve asbestos substitution concerns
- Eliminate cold flow problems
- Reduces inventory costs
- Increases the overall life of the system

#### Sizes

All standard ANSI and API flange sizes from 1/2 and above.

Custom odd sizes and shapes.

#### Pressure Ratings

All ANSI and API rated flanges.

Pressures from hard vacuum to 50,000 psi and higher.



		LineBacker <sup>fi</sup> Zero™	LineBacker <sup>fi</sup> 250™	LineBacker <sup>fi</sup> 251™
ASTM D-149	Dielectric Strength Volts/mil (Short Time)	500	500	550
ASTM D695	Compressive Strength	25,000 psi	50,000 psi	50,000 psi
ASTM D229	Water Absorbtion	1.8%	0.15%	0.15%
ASTM D790	Flexural Strength	20,500 psi	50,000 psi	50,000 psi
ASTM D785	Hardness	85	110	110
ASTM D256	IZOD Impact Strength	1.2 ft-lbs/in	11.5 ft-lbs/in	12.5 ft-lbs/in
ASTM D638	Tensile Strength	23,000 psi	40,000 psi	45,000 psi
ASTM D32	Shear Strength	10,000 psi	18,000 psi	20,000 psi
ASTM F-36	Compressibility	1.8%	2.0%	2.1%
ASTM F-36	Recovery	100.0%	88.9%	88.9%
ASTM F-38(B)	Creep Relaxation	65.7%	17.2%	5.1%
DIN-3535	Gas Permeability	0.00 cm3/min.	0.29 cm3/min.	0.43 cm3/min.
DIN 52913	Stress Relaxation	N/A	49.4N/mm2	N/A
	Operating Temperature	-60 to +220° F. -51 to +104° C.	-60 to +350° F. -51 to +177° C.	Cryogenic to +250° F. Cryogenic to +121° C.



## Suggested Sealing Gasket Material Compatibility

	LineBacker <sup>fi</sup> Zero™	LineBacker <sup>fi</sup> 250™	LineBacker <sup>fi</sup> 251™
Ammonia	R	R	R
Ammonium Hydroxide	F	F	R
Benzene	R	R	R
Butane	NT	NT	R
Calcium Hydroxide	U	U	R
Crude Oil	R	R	R
Dilute Acids	R	R	R
Dilute Caustics	U	R	R
Ethanol	NR	NR	R
Gasoline	R	R	R
Hydrochloric Acid 20%	R	R	R
Hydrogen	NT	NT	R
Hydrogen Sulfide	NT	NT	R
Jet Fuel	R	R	R
Kerosene	R	R	R
Methanol	R	R	R
Naptha	R	R	R
Natural Gas	R	R	R
Nitric Acid 10%	U	U	R
Nitric Acid 20%	U	U	F
Potable Water	NR	NR	R
Propane	R	R	R
Salt Brine	R	R	R
Sea Water	R	R	R
Sewage	R	R	R
Steam to 350° F	U	R	U
Steam Condensate to 250° F	U	R	F
Sulfuric Acid 10%	U	U	R
Toluene	F	F	R

R = Resistant    NR = Not Recommended    F = Fair    U = Unsatisfactory    NT = Not Tested

### General Notes:

The foregoing performance data are intended as guidelines only. Performance suitability for any specific applications should be determined by the user.

Variation in temperature, pressure, concentration or mixtures acting synergistically may preclude suggested service use.

Material selection is at the sole risk of the user. Consult with a specialist or PSI factory for specific applications.

### The LineBacker Tackles Asbestos Substitute Problems

The LineBacker seals better than either asbestos or asbestos substitute gaskets under most conditions. The LineBacker will maintain its sealing integrity from hard vacuum to pressures in excess of ANSI and API flange test ratings.

### The LineBacker Tackles Flange Leaks and Blowouts

The flange-to-retainer loading and retainer hoop strength, combined with the powerful pressure-energized feature of the LineBacker is powerful enough to prevent sudden catastrophic gasket failure.

### The LineBacker Tackles Installation and Maintenance Costs

A positive seal is effected first time, every time. Time spent in re-tightening or re-sealing flanges to compensate for gasket materials cold flow is also eliminated.

### The LineBacker Tackles Inventory Costs

The patented design of the LineBacker permits it to be used with ring joint, flat faced or raised face flanges; or with any combination of these flanges in a given size and pressure rating.

### The LineBacker Tackles Flange Damage

Near zero m and y factors make it possible to effect a positive seal without the tremendous bolt loads that are required with flat gaskets. Choosing retainer materials compatible with the flange materials will reduce potential corrosion problems. Also, the unique design prevents flange galling that can occur with chevron design gaskets.

# FlangeMate<sup>fi</sup> Sealing Gaskets

With a metal retainer, the FlangeMate provides superior hoop strength and positive assurance against gasket blowout. In addition, the FlangeMate metal-to-metal contact between flange faces and the metal retainer makes it impossible to damage the gasket by over-torquing during installation. This also eliminates the need for gauge rings and other devices and methods to assure the correct torque for a positive seal.

The FlangeMate gasket concentrates the total compressive load of a flange face on the sealing elements to produce a seal with a higher sealing load per square inch than any other gasket. Sealing elements may be made from any compressible material while retainers may be fabricated from any formable metal.

## Sizes

All standard ANSI and API flange sizes from 1/2" and above.  
Custom odd sizes and shapes.

## Pressure Ratings

All ANSI and API rated flanges.  
Pressures from hard vacuum to 50,000 psi and higher.



### Metal Retainer Materials

Aluminum  
Brass  
Carpenter 20  
Carbon Steel  
Clad Steel Materials  
Copper  
Hastelloy B  
Hastelloy C  
Hastelloy X  
Inconel X  
Monel  
Nickel  
Soft Iron  
Stainless Steel  
Tantalum  
Tin  
Titanium  
Vanadium

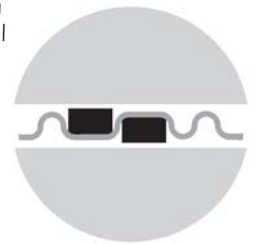
### Sealing Elements

Buna-N (Nitrile)  
Buna-S  
Butyl  
EPDM  
Grafoil  
Hypalon  
Kel-F  
Lead  
Natural Rubbers  
Neoprene  
Nylon  
Polyethylene  
Polyimide  
Polypropylene  
Polyurethane  
Silicone Rubber  
Soft Copper  
Teflon<sup>fi</sup>  
Vinyl (PVC)  
Viton<sup>fi</sup>

<sup>fi</sup> DuPont

### Before Tightening

The flange faces come into contact with both the sealing elements and the metal retainer. This initiates the sealing process, and results in the highest possible compressive load on the seals after the flange has been fully tightened.



### After Tightening

The flange faces have reformed the metal retainer to encapsulate the sealing elements within grooves which controls the cold flow characteristics of the sealing material. The high compressive load developed by the tightened flange is concentrated on the seals. Over-torquing is impossible because of the metal-to-metal contact between the retainer and the flange faces.



# Custom Sealing Gaskets



Custom sealing gaskets may be manufactured for flanges from 3/8 diameter and up. For added flexibility and to accommodate a wide variety of flange types, sealing elements may be positioned anywhere between the I.D. of the bolt circle and I.D. of the gasket. In addition, PSI has designed and installed large diameter sealing gaskets with two sealing elements to provide maximum protection and reliability.

Custom shaped gaskets may be manufactured to precise customer specifications for sealing mating surfaces of any configuration.

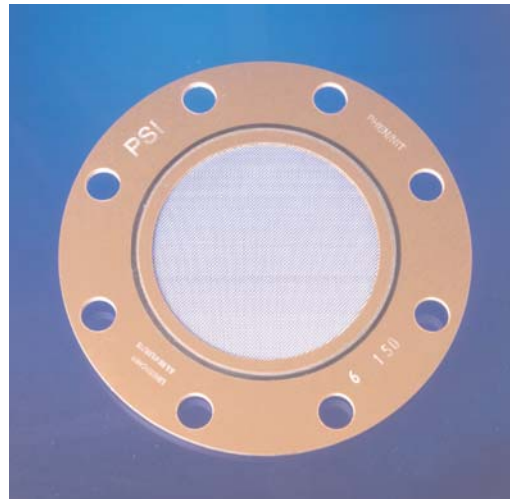
Standard gaskets for flanges as well as custom gaskets have been field

proven in the following industries.

- Wood and Pulp Processing Mills
- Refineries
- Chemical Plants
- Pipeline and Distribution Piping
- Production Fields
- Shipboard Installations
- Electric Power Generation Plants
- Steel Mills
- LNG and SNG Systems
- Petroleum Marketing Facilities

## LineBacker™ for clean natural gas.

The LineBacker Screened Gasket is manufactured for clean natural gas service. It is designed to reduce the possibility of contaminants entering meters and other gas handling equipment. Recommended by rotary meter manufacturers for use upstream of their meters, the LineBacker Screened Gasket can be placed between your flanges without re-engineering or re-piping.



## LinkBackerfi gaskets used in Olympic flame tower.

The traditional "lighting of the torch" concluded a two-hour opening ceremony celebrating the start of the 2002 Winter Olympic Games in Salt Lake City, Utah. While the identity of the "individual" who would light the flame had been kept a closely guarded secret, the crowd warmly greeted America's gold medal winning ice hockey team from 1980 with chants of "U-S-A" as they lit the flame. The Olympic torch, designed and built by Wet Design, included 2-inch and 4-inch diameter 150ANSI LinkBackerfi gaskets. Chosen for their unmatched sealing reliability, LinkBackerfi gaskets were an integral part of a system that fueled an Olympic flame that was to burn brightly throughout the 2002 games.



## How to Order

Please provide the following information:

1. Quantity
2. Nominal Pipe Size
3. Pressure Rating
4. Gasket Type: E or F
5. Gasket Style: LineBacker, GasketSeal or FlangeMate
6. Retainer Material
7. Sealing Element
8. Weld neck or slip-on application
9. Note all special requirements
10. Contact your local distributor or PSI

**How to Order Example:** Gasket pictured below.  
1- 3" 150# F LB G-10/Viton Weld Neck



## ISO 9001:2000 Quality Assurance

All PSI facilities are ISO 9001:2000 certified with extensive quality control procedures in effect to insure total compliance with product performance and reliability standards. In addition, all PSI gaskets are clearly marked with the following information to guarantee that the correct gasket is used for its intended application.

- Brand Name
- Material Make-up (retainer/seal element)
- Pipe Size
- Pressure Rating
- Date of Manufacture Stamp

## Warranty

All products are warranted against failure caused by manufacturing defects for a period of one year. Any product found to be so defective and returned within one year from date of shipment will be replaced without charge.

The above warranty is made in lieu of, and we disclaim, any and all other warranties, expressed or implied, including the warranties of merchantability and fitness for a particular purpose, and buyer agrees to accept the products without any such warranties.

We hereby disclaim any obligation or liability for consequential damages, labor costs or any other claims or liabilities of any kind whatsoever.



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PSI-SG-305



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Certificate No. NACB7895

