

*Advancing the Science of Sealing™*

# Engineered Gasketing Products



**Garlock**  
SEALING TECHNOLOGIES®

an EnPro Industries company

# Style 706

## Benefits

### Heat and oxidation resistance

- Inorganic, asbestos-free fibers offer superior performance in saturated and superheated steam†
- Thermally stable fibers retain effective seal even during thermal cycling to 750°F (400°C)

### Long-lasting seal

- Unique manufacturing process minimizes cold flow and creep relaxation problems

### Versatile

- Ideal for standard ANSI flanged connectors, as well as turbine crossover piping connectors
- Multiple applications in power generation, chemical processing, hydrocarbon processing, and other industries

Patent #5,603,513



## Media

- Style 706:** Saturated and super heated steam†, oils, grease, water, and heat transfer fluids\*
- Style 5500:** Water, aliphatic hydrocarbons, oils, gasoline, saturated steam†, inert gases, most refrigerants
- Style 5507:** Water, saturated steam†, mild chemicals and mild alkalies

# Styles 5500 and 5507

## Benefits

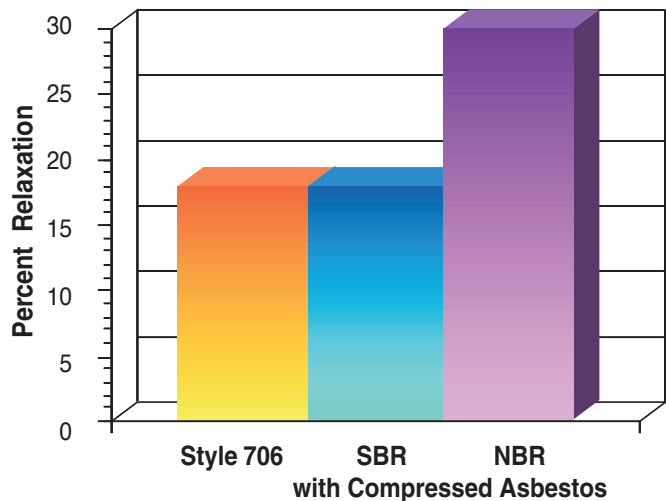
### Tighter seal

- Inorganic fiber gasketing offers excellent thermal stability with minimal weight loss
- Reduced creep relaxation and improved torque retention provide optimal sealability

### Temperature resistant

- Non-oxidizing fibers withstand a continuous operating temperature of up to 550°F (290°C), and maximum spike of 800°F (425°C)
- Style 5500 has passed the Garlock Fire Test and is ABS Fire Safe Type Approved.

ASTM F38 Typical Creep Relaxation



\* Contact Garlock Engineering with specific transfer fluid application.  
† Above 150 psig, contact Engineering.

### WARNING:

Properties/applications shown throughout this brochure are typical. Your specific application should not be undertaken without independent study and evaluation for suitability. For specific application recommendations consult Garlock. Failure to select the proper sealing products could result in property damage and/or serious personal injury.

Performance data published in this brochure has been developed from field testing, customer field reports and/or in-house testing.

While the utmost care has been used in compiling this brochure, we assume no responsibility for errors. Specifications subject to change without notice. This edition cancels all previous issues. Subject to change without notice.

GARLOCK is a registered trademark for packings, seals, gaskets, and other products of Garlock.

# Style 9900



## Benefits

### Tough and reliable

- Graphite fiber gasketing withstands extreme temperatures and pressures, as well as many chemicals
- Passed Garlock Fire tests, and is ABS Fire Safe Type Approved
- Meets Navy Spec STR 508<sup>2</sup>

### Tighter seal

- Maintains superior seal during thermal cycling, even in saturated steam<sup>†</sup> and hot oils
- Significantly reduces emissions to meet stringent Clean Air Act requirements

### Easy to install

- Graphite fiber sheet is easier to handle and cut than exfoliated graphite sheets or metal-inserted gasket material

**Note:** 1. For nuclear orders, specify Style G-9920.  
2. Refer to Mil Spec section under "Gasketing Terms" for order/inquiry requirements



At the Garlock on-site fire test facility, valves and sealing materials have been tested for functionality in the most extreme applications. 9900, 9800, 9850, 706 and 5500 meet these stringent fire test standards.

# Hi-Temp Styles 9800 / 9850



## Benefits

### Heat and pressure resistant

- Carbon fiber gasketing excels in harshest conditions—intense heat, high pressure, saturated steam<sup>†</sup> and hot oils
- Laboratory-tested for fire safety

### Tighter seal

- Maintains effective seal during pressure and temperature fluctuations
- Superior torque retention lowers leakage rates and reduces maintenance time

### Convenient

- Flexible material is easy to handle and cut
- Sheet sizes to 150" x 150" (3.8 m x 3.8 m) minimize waste and inventory costs

## Media

- 9900:** Saturated steam<sup>†</sup>, water, inert gases, aliphatic hydrocarbons, oils, gasoline, and most refrigerants
- 9800:** Saturated steam<sup>†</sup>, water, and inert gases
- 9850:** Water, saturated steam<sup>†</sup>, aliphatic hydrocarbons, oils, gasoline, most refrigerants

<sup>†</sup> Above 150 psig, contact Engineering.



**Questions? Call Gasket Applications Engineering at 1-800-448-6688.**

### WARNING:

Properties/applications shown throughout this brochure are typical. Your specific application should not be undertaken without independent study and evaluation for suitability. For specific application recommendations consult Garlock. Failure to select the proper sealing products could result in property damage and/or serious personal injury.

Performance data published in this brochure has been developed from field testing, customer field reports and/or in-house testing.

While the utmost care has been used in compiling this brochure, we assume no responsibility for errors. Specifications subject to change without notice. This edition cancels all previous issues. Subject to change without notice.

GARLOCK is a registered trademark for packings, seals, gaskets, and other products of Garlock.

# BLUE-GARD®

## Styles 3000 to 3700

### Benefits

#### Excellent sealability

- Unique blend of aramid fibers, fillers and elastomeric binders provides improved torque retention and drastically lowered emissions levels

#### Versatile

- Variety of elastomers excel in a wide range of services

#### Cost savings

- Cuts operational costs through reduced:
  - Waste
  - Maintenance
  - Stocked inventory
  - Fluid loss
  - Energy consumption



# Styles 2900, 2950

### Benefits

#### Ideal for utility services

- Excellent sealability
- Improved thermal stability
- Good for general service

### Media

- 3000:** Water, aliphatic hydrocarbons, oils, and gasoline
  - WRC BS 6920 Approved
  - Meets BS7531 Grade Y Specifications
- 3200, 3400:** Water, saturated steam<sup>2</sup>, inert gases (Style 3200 meets MIL-G-24696)<sup>1</sup>
- 3300:** Water, saturated steam<sup>2</sup>, refrigerants, oils, and fuels
- 3700:** Water, saturated steam<sup>2</sup>, and mild chemicals
- 2900, 2950:** Water, aliphatic hydrocarbons, oils, and gasoline

#### Notes:

<sup>1</sup> Refer to Mil spec section under "Gasketing Terms" for order/inquiry requirements. To ensure receipt of product branded Mil-G-24696, certification will be required - fees associated based on quantity. Refer to Mil spec section under "Gasketing Terms" for order/inquiry requirements.

All styles are furnished with an anti-stick parting agent as standard.

<sup>2</sup> Above 150 psig, contact Engineering.



BLUE-GARD®  
Style 3000

#### WARNING:

Properties/applications shown throughout this brochure are typical. Your specific application should not be undertaken without independent study and evaluation for suitability. For specific application recommendations consult Garlock. Failure to select the proper sealing products could result in property damage and/or serious personal injury.

Performance data published in this brochure has been developed from field testing, customer field reports and/or in-house testing.

While the utmost care has been used in compiling this brochure, we assume no responsibility for errors. Specifications subject to change without notice. This edition cancels all previous issues. Subject to change without notice.

GARLOCK is a registered trademark for packings, seals, gaskets, and other products of Garlock.

# GYLON® Styles 3500 to 3510

## Benefits

### Tighter seal

- Improved performance over conventional PTFE
- Reduced product loss and emissions

### Reduced creep relaxation

- Unique manufacturing process minimizes cold flow problems typical of skived and expanded PTFE sheets
- Excellent bolt torque retention

### Chemical resistance

- Withstands a wide range of chemicals for extended service life in a wide variety of applications

### Cost savings

- Cuts operational costs through reduced:
  - Fluid loss
  - Energy consumption
  - Maintenance costs
  - Inventory costs
  - Waste

### Largest sheet sizes\*

- Offers some of the largest sheet sizes in the industry
- Improved material utilization reduces waste

### Branding and color coding

- Easy identification of superior GYLON® products
- Reduces misapplication and use of unauthorized, inferior substitutes

\* 60" x 60" (1524 mm x 1524 mm), 70" x 70" (1778 mm x 1778 mm), 60" x 90" (1524 mm x 2286 mm)

## Media

**GYLON® 3500:** Strong acids (except hydrofluoric), solvents, hydrocarbons, water, steam, chlorine, and cryogenics. Conforms to FDA regulations. (For oxygen service, specify "Style 3502 for oxygen service.")

**GYLON® 3504:** Moderate concentrations of acids and some caustics, hydrocarbons, solvents, water, refrigerants, and cryogenics. Conforms to FDA regulations. (For oxygen service, specify "Style 3505 for oxygen service.")

**GYLON® 3510:** Strong caustics, moderate acids, chlorine, gases, water, steam, hydrocarbons, and cryogenics. Conforms to FDA regulations. (For oxygen service, specify "Style 3503 for oxygen service.")

# Thermally Bonded GYLON®

## Benefits

### Effective seal

- Patented bonding process produces large gaskets without dovetailed joints that permit leakage
- GYLON® material provides the excellent chemical resistance of PTFE without creep relaxation and cold flow problems

### Versatile

- Ideal for corrosive applications with extra-large flanges
- Styles 3500, 3504, 3510, HP 3560, HP 3561, 3565, and 3594 can all be welded using this process

# Style 3535 Joint Sealant

## Benefits

### Chemical resistance

- Pure PTFE is chemically inert, withstands a wide range of chemicals
- Conforms to FDA regulations

### Easy to install

- Continuous length on spools is easily cut and formed
- Strong adhesive backing aids installation on narrow or hard-to-reach flanges
- Available in widths from 1/8" to 1"

## Typical Physical Properties

<b>Sealability</b>	(ASTM F37B) <sup>1</sup>	ml/hr	0.1
<b>Gas Permeability</b>	(DIN 3535 Part 4) <sup>2</sup>	cc/min.	0.05
<b>Temperature</b>	-450°F (-268°C) to 500°F (260°C)		
<b>Pressure</b>	800 psig max.		

### Notes:

<sup>1</sup> ASTM F37B Sealability, milliliters/hour (1/4" thick)  
ASTM Fuel A (isooctane):  
Gasket load: 3,000 psi (20.7 N/mm<sup>2</sup>), Internal pressure: 30 psig (2 bar)

<sup>2</sup> DIN 3535 Part 4 Gas Permeability, cc/min. (1/4" thick)  
Nitrogen:  
Internal pressure: 580 psig (40 bar), Gasket load: 4,640 psi (32 N/mm<sup>2</sup>)

# GYLON® Style 3545

## Benefits

### Tighter seal

- Highly compressible PTFE outer layers seal under low bolt load—suitable for many flat face and glass-lined flanges\*
- Compressible layers conform to surface irregularities, especially on warped, pitted or scratched flanges
- Rigid PTFE core reduces cold flow and creep normally associated with conventional PTFE gaskets

### Excellent chemical compatibility

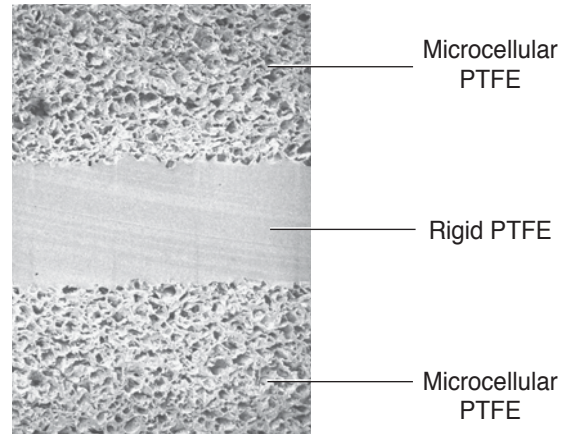
- Pure PTFE withstands a wide range of chemicals

### Easy to cut and install

- Soft PTFE can be cut easily from larger sheets, reducing inventory costs and expensive downtime
- Rigid PTFE core facilitates installation, especially on large diameter flanges and hard-to-reach areas



## Configuration



Cross-sectional view under electron microscope  
All layers manufactured using proprietary GYLON® process—thermally fused layers, without the use of adhesives

## GYLON® Style 3540

- Pure microcellular PTFE
- Similar to Style 3545, but without rigid core
- Ideal for wavy, warped, pitted, or scratched flanges, and for many types of flat face\* flanges

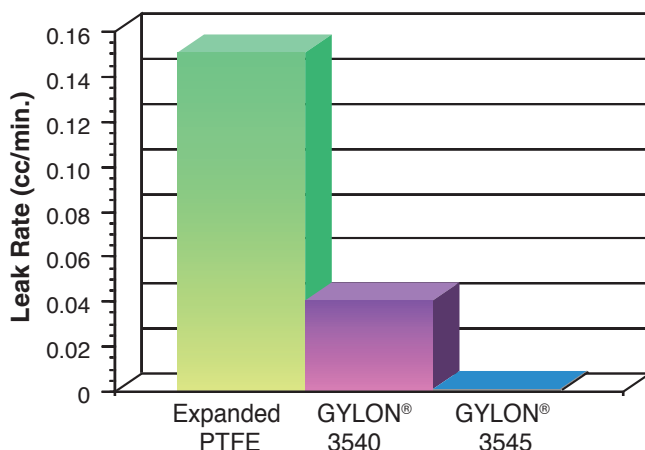
## Media

**GYLON® 3540:** Strong caustics, strong acids, hydrocarbons and chlorine, cryogenics. Conforms to FDA regulations.

**GYLON® 3545:** Strong caustics, strong acids, hydrocarbons, chlorine and cryogenics and glass-lined equipment. Conforms to FDA regulations.

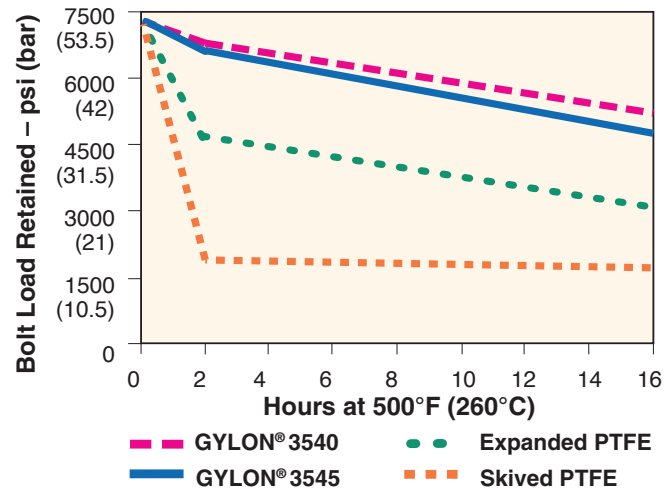
## Test Results

DIN 3535 Gasket Permeation Test



Note the dramatically reduced leakage of GYLON® 3540 and 3545. Average of three tests, using 580 psig nitrogen with 4,640 psi gasket load according to DIN 3535 requirements. All samples 1/16" (1.6 mm) thick.

DIN 52913 Gasket Bolt Load vs. Time



High bolt load retention of GYLON® 3540 and 3545, especially at high temperatures, indicates gasket is less likely to incur gross leakage (blowout).

\* For flat face flanges, a minimum compressive stress of 1,500 psi (10.3 N/mm<sup>2</sup>) is recommended on the contacted gasket area for 150 psig (1.0 N/mm<sup>2</sup>) liquid service. Consult with the flange manufacturer to confirm that adequate compressive stress is available.

# GYLON® Styles HP 3560 / HP 3561

## Benefits

### Tight seal

- Perforated stainless steel core increases resistance to pressure fluctuations and thermal cycling
- GYLON® offers superior cold flow and creep resistance, eliminating the need for frequent retorquing

### Chemical resistance

- Seals aggressive chemicals in hostile environments where safety or blowout resistance is crucial\*

# GYLON® Style 3565 ENVELON® Gasketing\*\*

## Benefits

### Tighter seal

- Soft, deformable exterior conforms to surface irregularities; ideal for worn, warped or pitted flanges
- Stable blue core improves cold flow resistance
- Low bolt load requirements ensure a tight seal on glass-lined or wavy flanges†
- Direct sintering of GYLON® layers prevents leak paths and adhesive contamination

### Easy to install

- Unitized construction avoids jacket foldover
- Rigid core facilitates installation of large gaskets

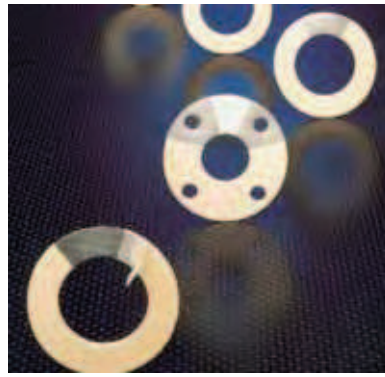
### Minimizes inventory

- Custom-cut gaskets from large sheets offer convenience while reducing costly inventory buildup
- Ideal replacement for slit, milled, formed shield and double jacketed envelope gaskets†

\* Consult Garlock Applications Engineering when using flanges in pressure classes above 300 lbs.

\*\* Patents #4,961,891; #4,900,629

† When sealing uneven flanges, gasket must be four times thicker than maximum gap between flanges.



## Media

**HP 3560:** Strong acids (except hydrofluoric), solvents, hydrocarbons, water, steam, chlorine, and cryogenics (For oxygen service, specify "HP 3562 for oxygen service.")

**HP 3561:** Strong caustics, moderate acids, chlorine, gases, water, steam, hydrocarbons, cryogenics (For oxygen service, specify "HP 3563 for oxygen service.")

**Style 3565:  
ENVELON®** Moderate concentrations of acids and caustics, hydrocarbons, solvents, cryogenics, and glass-lined equipment. Conforms to FDA regulations



### WARNING:

Properties/applications shown throughout this brochure are typical. Your specific application should not be undertaken without independent study and evaluation for suitability. For specific application recommendations consult Garlock. Failure to select the proper sealing products could result in property damage and/or serious personal injury.

Performance data published in this brochure has been developed from field testing, customer field reports and/or in-house testing.

While the utmost care has been used in compiling this brochure, we assume no responsibility for errors. Specifications subject to change without notice. This edition cancels all previous issues. Subject to change without notice.

GARLOCK is a registered trademark for packings, seals, gaskets, and other products of Garlock.