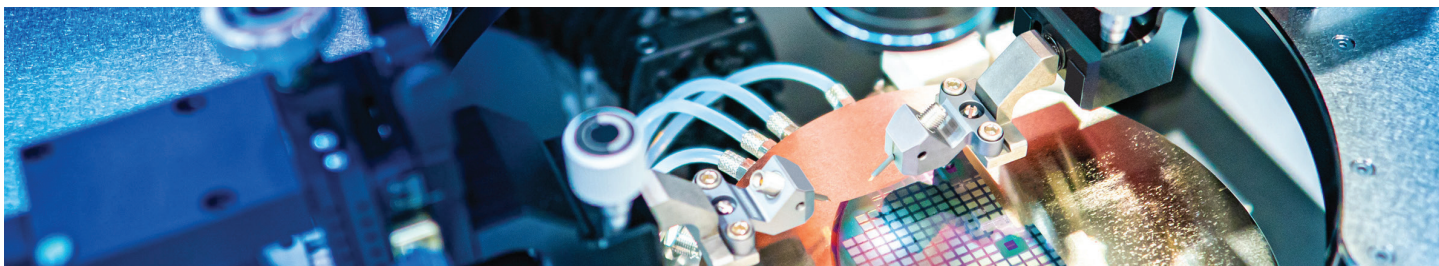




HANNA RUBBER COMPANY

# Specialty Process Sealing Solutions

## Semiconductor Manufacturing



- PUMP DIAPHRAGMS
- EXPANSION JOINTS
- FLANGE GASKETS
- MATERIAL SCIENCE

Garlock offers a wide range of application-specific sealing products strategically targeting Semiconductor manufacturing process challenges, regardless of system requirements, including:

**Purity** - To protect product quality and purity, our solutions can handle extremely sensitive systems, such as chemical exhaust tool hook-ups and ultrapure water systems.

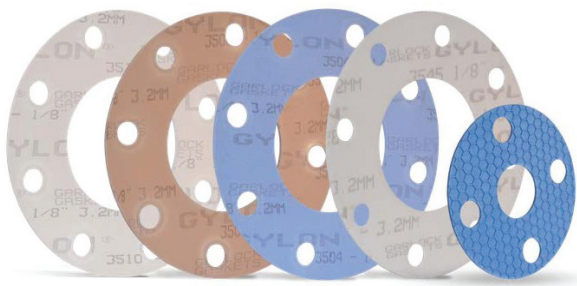
**Process Safety** - Our products withstand highly volatile and aggressive chemicals, high temperatures, and high pressures, keeping plant personnel and equipment safe from hazards and unanticipated disruptions.

**Integrity** - We design sealing solutions for long service life and minimal maintenance, reducing costly downtime and inefficient operations.

## Key Semiconductor Applications

**Process Systems:** Ultrapure Water, Specified Water, Central Vacuum, Chemical Distribution, Specialty Waste

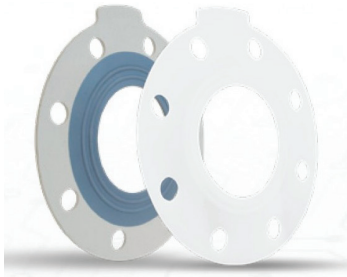
**Utility Systems:** Central Steam, Cooling Water, Rinse Water, Wastewater, Compressed Air



### GYLON® High-Performance PTFE Material

Manufactured using a Garlock proprietary process, GYLON® has unique physical properties that reduce creep and cold flow, improving performance reliability. GYLON® offers superior leak prevention, leading to increased uptime, reduced maintenance, and substantial cost savings.

## Semiconductor Process Systems



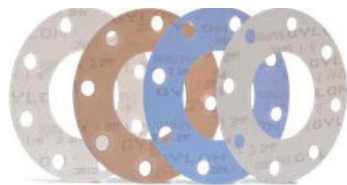
### Ultrapure Water Systems (UPW) / STRESS SAVER® 3522 & STRESS SAVER® 370

As a microelectronics manufacturer, eliminating contamination risks in the water and fabrication process is critical to ensure long-term reliability and desired system efficiencies. Ideal for ultrapure water systems, Garlock's 100% pure PTFE STRESS SAVER® 3522 and the PTFE encapsulated EPDM STRESS SAVER® 370 can reduce those cross-contamination risks associated with traditional flange gaskets. The STRESS SAVER® 3522 and STRESS SAVER® 370 gaskets feature molded-in stress concentrators that significantly reduce the contact surface area, thus allowing for low load and reliable sealing, even in less-than-perfect flange connections. Special high-purity packaging and handling options are also available if specified.



### Chemical Dosing / GYLON® Gaskets

The aggressive and volatile chemistries of semiconductor fabrication require piping systems designed for human safety and environmental compliance. Ensure leak containment and prevent potential hazards with our proprietary gaskets that limit creep and cold flow over time, ensuring reliable and chemically compatible sealing solutions.



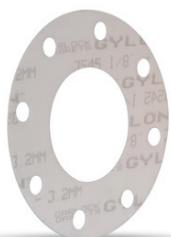
### Chemical Handling & Distribution Systems / GYLON® Gaskets & SURE-LINK™ Pipe Expansion Joints

Semiconductor fabrication piping systems need to safely transport critical process media. Garlock uses proprietary gasket and expansion joint technologies to ensure leak-free, chemically compatible sealing and avoid potentially hazardous conditions.



Garlock's industry-proven GYLON® gasket sealing solutions provide superior resistance to creep and cold flow, equating to long-term, reliable sealing to help ensure process efficiencies and unexpected system downtime.

Bulk chemical distribution piping can involve higher pressure requirements and overhead installation over high-traffic areas. Garlock SURE-LINK™ PTFE Expansion Joints are designed to handle these systems' hydraulic and thermal reactions. Ideal for non-metallic chemical piping systems and available in various sizes, SURE-LINK™ expansion joints can operate at temperatures ranging from -100° F to 450° F, offering full vacuum capabilities and upwards of 178 PSIG – dependent on operating temperatures.



### Chemical Exhaust Tool Hook-Up / GYLON® Style 3545 Gasket

Etching, coating, cleaning, drying, and vaporization processes produce chemical-laden vapors that must be actively evacuated from tooling chambers to avoid contamination. These conditions require a chemical exhaust system with leak-free integrity. Garlock's GYLON® 3545 utilizes a very conformable microcellular PTFE body with a rigid PTFE center layer, offering up to 70% compressibility, universal chemical compatibility, and a tight, reliable seal to prevent leaks in your chemical exhaust systems.

## Semiconductor Utility Systems



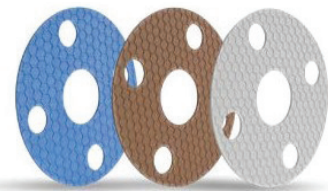
### Hydronics - Central Hot and Cold Water / MULTI-SWELL® Style 3760 Gaskets

Garlock MULTI-SWELL® Style 3760 and 3760-U (NSF-61 approved for potable water systems) are manufactured from synthetic fibers and proprietary fillers to help obtain a tight seal, supporting water conservation efforts in central hot and cold-water systems as well as other industrial sealing applications. The unique formulation is designed to react with targeted media such as oil and water, offering a controlled swell technology. Controlled swell helps to combat relaxation in the flange assembly and provides sealing integrity over time. Twice as compressible as standard fiber gaskets, MULTI-SWELL® also offers forgiveness in irregular or less-than-perfect flange conditions, making installation much more forgiving.



### Central Thermal and Waste Systems / Style P2000 Expansion Joint

In addition to other energy-cutting technologies, central thermal and waste systems require sustainability through hydraulic efficiency, thermal regeneration, water reclaim, and waste treatment. The Style P2000 expansion joint combines optimal mechanical design with the latest advancements in textiles and elastomer technology. With exceptional pressure and movement capability, the P2000 offers versatility for common piping applications for the most critical and safety-conscious sustainability requirements.



### Utility Maintenance / GYLON EPIX® Style 3500, 3504, 3510 Gaskets & Style P2000 Expansion Joints

Service interruptions from improper bolt loading, poor flange conditions, media incompatibility, or incorrect gasket selection can negatively impact your facility's bottom line. The GYLON EPIX® family of flange gaskets are designed to prevent these issues and are well-suited for bolt load-challenged connections, simplifying existing system maintenance.

In addition to other energy and maintenance cost-cutting technologies, the Style P2000 offers long-term reliability in various flange connections and system applications. The Style P2000 expansion joint not only offsets the system strains created by thermal expansion and contraction but is also engineered to accommodate significant and unpredictable, pressure and vacuum system upsets. Available in a wide range of materials and with exceptional pressure and movement capabilities, the P2000 offers versatility for the most critical and safety-conscious pump and piping applications.