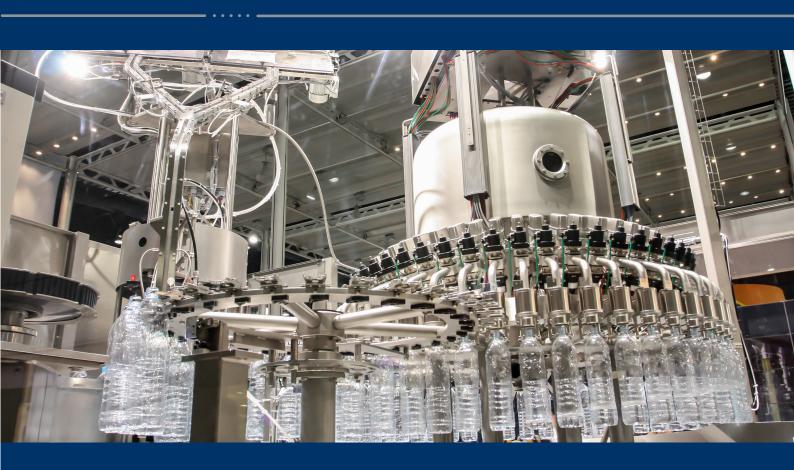


Sealing Reliability for Food & Beverage

Product Recommendation Guide

HELPING INDUSTRY BECOME; MORE SAFE, MORE PRODUCTIVE, AND MORE SUSTAINABLE



Garlock

The Leader in Safety

As the global leader in highly engineered sealing solutions, we at Garlock® make safety the number one priority and the driving force behind everything we do. Our products perform critical functions in the industries we serve. We go the extra mile to make sure our sealing solutions comply with the highest environmental standards in order to prevent unwanted emissions and deliver unmatched reliability and performance in some of the most demanding environments on earth.

High-Performance Sealing Solutions for the Food and Beverage Industry

From raw materials to final packaging, Garlock engineers and manufactures a comprehensive range of sealing solutions specifically for the varied conditions and materials used in food and beverage production. Our applications engineers and technical experts work in close partnership with our customers to understand the complexity of their operations and the diversity of their sealing challenges; only then do we begin to prescribe specific products to meet their requirements.

With an emphasis on safety, compliance, traceability, product integrity and lean manufacturing compatibility, Garlock's sealing solutions are designed to provide industry-leading performance while maximizing system uptime and equipment utilization. We understand the unique requirements of food and beverage processing, whether it's the industrial-scale refining of edible oils and sugar or the extreme sanitary requirements of dairy processing. Garlock creates solutions that keep both the pipeline and the bottom line in mind.

Sealing Solutions



A Complete Range of Sealing Solutions

Product Offerings

- Soft Cut Gaskets
- Metallic Gaskets
- High Performance Gaskets
- Extreme Temperature Gaskets
- Compression Packing
- Packing Support Products
- Expansion Joints
- KLOZURE® Bearing Isolator
- KLOZURE® Radial Lip Seals
- **Industries Served**
 - Food & Beverage
 - Pharmaceutical
 - Pulp & Paper
 - Power Generation
 - Chemical

- ONE-UP® Pump Diaphragms
- Color-Plast Shim
- High Temperature Textiles
- Spray Stop Covers
- Engineering Rubber/Rubber Rolls
- Mechanical Seals
- Flexible Connectors
- Lubrication
- Mining
- Primary Metals
- Water Treatment
- General Industry
- Manufacturing

Gaskets

Positive Seals and Proven Reliability

Our gasketing products are offered in a wide range of materials, including GYLON® restructured PTFE gaskets, an industry standard for resistance to aggressive chemicals. A patented thermal bonding process enables the production of one-piece gaskets instead of separate segments or gaskets can be dovetailed.



GYLON®

GYLON® gaskets deliver improved performance over conventional PTFE, advantages include reduced creep relaxation and the ability to withstand a wide range of chemicals.



STRESS SAVER® 3504

STRESS SAVER® 3504

combines the proven sealing advantages of molded, raised ribs with the performance characteristics of GYLON® 3504 PTFE gasketing material.



STRESS SAVER® XP

A single piece molded design made from a highperformance proprietary blend of fluoroelastomers, STRESS SAVER® XP is suitable for use in potable water, steam and most chemical applications. This formulation outperforms traditional fluoroelastomers in severe chemical and steam applications that require improved heat resistance.



Premium Rubber

Garlock premium rubber gasketing sheets are manufactured with a wide range of natural and synthetic rubbers, including 8316 FDA compliant EPDM. They can be deformed, but not reduced in volume. Highly impermeable Garlock rubber gasketing can serve as a tight barrier against the infiltration of gases or liquids.



Compressed Fibre Gaskets

Positive Seals and Proven Reliability

Garlock offers a full range of compressed fibre gasketing made from aramid and synthetic fibres to meet most applications. The range includes general service gaskets, the versatile unique blends of BLUE-GARD®, and medium to high end gaskets.



		3000	3200/34004/5	33004	3700⁴	2900/2950	5500 ⁴
Color		Blue	Off-white/ Grey-black	Black	Light grey	Black/Green	Gray
Binder		Nitrile (NBR)	SBR	Neoprene (CR)	EPDM	Nitrile (NBR)	Nitrile (NBR
Temperature ¹	Maximum: Minimum: Ideal Operating Limit:	+700°F (+370°C) -100°F (-75°C) +400°F (+205°C)	800°F (425°C -100°F (-75°C 550°F (290°C				
Pressure ¹ psig (bar)							
	Maximum: Minimum: Ideal Operating Limit:	1,000 (70) Full Vacuum 750 (52)	1,200 (83) Full Vacuum 750 (52)	1,200 (83) Full Vacuum 750 (52)	1,200 (83) Full Vacuum 750 (52)	1,000 (70) Full Vacuum 750 (52)	1,200 psig (83 bar-g) Full Vacuum 750 psig (52 bar-g)
P x T, max. (psig x °F)	1/32", 1/16" (0.8mm, 1.6mm) 1/8"	350,000 (12,000) 250,000	350,000 (12,000) 250,000	350,000 (12,000) 250,000	350,000 (12,000) 250,000	350,000 (12,000) 250,000	400,000 (14,000) 275,000 (9,600)
(bar x °C)	(3.2mm)	(8,600)	(8,600)	(8,600)	(8,600)	(8,600)	(9,000)
Sealability (ASTM F37B) ² ASTM Fuel A Nitrogen	ml/hr ml/hr	0.2 0.6	0.3 0.7	0.2 1.0	0.3 0.7	0.5 1.00	0.3 1.0
Creep Relaxation (ASTM F38)	%	21	18	20	20	25	25
Compressibility Average (ASTM F36)	%	8	10	10	10	8	10
Recovery (ASTM F36)	%	50	50	50	50	50	>50
Tensile Strength across grain (ASTM F152)	psi (N/mm²)	2,150 (15)	2,250 (16)	1,800 (12)	1,800 (12)	1,500 (10)	1,500 (10)
Density	lbs/ft³ (g/cm³)	100 (1.60)	100 (1.60)	105 (1.68)	100 (1.60)	105 (1.68)	100 (1.60)
Gas Permeability (DIN 3535-6)	mg/m-sec	0.005	0.003	0.008	0.004	-	0.005



Sanitary Gaskets - GYLON BIO-LINE®

Performance materials for demanding applications

GYLON BIO-LINE® PTFE seals offer an alternative to traditional elastomer materials and better withstand the harsh conditions found in many pharmaceutical applications. GYLON BIO-LINE® seals also resist intrusion, which can lead to material contamination and flow irregularities.



GYLON BIO-PRO®

GYLON BIO-PRO® gaskets are pre-formed to fit triclamp type joints precisely and ensure a smooth 'no trap' internal surface. Dimensionally stable over a wide range of process temperatures, GYLON BIO-PRO® gaskets do not creep or relax and lose their high-integrity seal. Meets EN 1935/2004, USP Class VI, FDA compliant and KTW approved. Seal dimensions in accordance with DIN 32676, DIN 1850, ISO1127, ASME BPE – 2009, ISO 2852, SMS 3019.



GYLON BIO-ECO®

The necessity for adequate sealing stress and simultaneous recovery makes GYLON BIO-ECO® the ideal solution for couplings in accordance with DIN 11851 and SMS1149. All of the disadvantages associated with standard elastomeric seals regarding temperature, chemical resistance and re-usability are eliminated by the modified PTFE material. GYLON BIO-ECO® seals are available in all dimensions without inner collar (M1) or with inner collar (M2).



GYLON BIO-ASEPT®

For aseptic flange connections in accordance with DIN 11853 and DIN 11864 (Form A), GYLON BIO-ASEPT® seals offer high stability and a specific elasticity. Our seals are pre-formed and stress controlled for solid sealing in piping systems. High performance PTFE sealing materials prevent chemical degradation or brittleness, even under ever-increasing process and sterilization demands.

Diaphragms

Innovative designs for long life & less maintenance

Garlock's proprietary materials, designs and high-quality construction give our diaphragms exceptional service life and reduced maintenance for a wide variety of food and beverage applications. From pure PTFE to one-piece bolt-on PTFE-bonded rubber diaphragms, if you have a difficult or critical application, Garlock has the diaphragm to meet your needs.



GYLON® ONE-UP® Pump Diaphragm

Made using our exclusive GYLON® PTFE Diaphragm material and a proprietary EPDM rubber backing, this product is made with the same patented rib construction of our standard industrial ONE-UP® pump diaphragm.



GYLON® PTFE Diaphragm Style 3522

Exclusive to Garlock, this proven product is made using a proprietary process that optimizes quality and uniformity. GYLON® PTFE diaphragms offer the longest cycle life in the industry, and continue to outperform all competitive materials.



High-Performance Rubber Diaphragms

Offering a variety of compounds to meet your needs, Garlock's high-performance rubber diaphragms comply with the strictest standards. We have compounds that comply with FDA standard 21CFR177.2600 and NSF 61.

Oil Seals

Specialty seals for challenging applications

Garlock's dynamic seals are engineered to meet the demanding temperature and chemical requirements of challenging and specialized food and beverage applications, including mixers, blenders, homogenizers and filling carousels.



Model 23

Garlock KLOZURE® Model 23 split oil seals in FDA compliant silicone provides longevity and easy installation for your general service oil seal requirements. Available in over 300,000 sizes and with 24 hour turn around available, the Model 23 allows for quick and easy installation for immediate oil seal needs.



Model 25

Garlock KLOZURE® Model 25 split PTFE oil seals are designed to provide sealing capabilities for environments that necessitate excellent chemical resistance or low speed service.



PS-SEAL®

High performance PS-SEAL® products operate with a sealing lip of modified PTFE, making them highly elastic and flexible with a very low coefficient of friction. They suffer little wear and require no metallic spring element. PS-SEAL® is specially designed for reliably sealing rotating shafts with high peripheral speeds, high pressure, temperature fluctuations and aggressive media.

Bearing Isolators

Exceptional fluid sealing for demanding applications

Garlock bearing isolators feature a labyrinth design that forms a non-contacting seal with no wearing parts for exceptional service life and contaminant prevention. Outboard and inboard drain grooves collect and expel contaminants through drain ports to achieve unmatched contaminant prevention and lubricant retention.



PUR-GARD™

PUR-GARD™ bearing isolators offer the ultimate rotating equipment sealing solutions for the food processing industry. Manufactured with materials that are FDA compliant, metal detectable and x-ray inspectable while utilizing a patented IP66 design, PUR-GARD™ is a revolutionary seal that combines improved safety and overall process purity with cost savings through extended equipment and bearing life.



ISO-GARD®

ISO-GARD® bearing isolators provide excellent chemical resistance within a wide temperature range, making them suitable for bearing protection in many applications. A press fit design allows for ease of installation without the use of tools, reducing production downtime and saving maintenance costs. As with all Garlock Isolators, ISO-GARD® comes in a variety of configurations; both flanged and non-flanged designs are available.

Mechanical Seals



P/S®-II

This high-pressure multi-lip cartridge seal is ideal for sealing viscous materials in a variety of chemical processing applications. It is suited for pressures up to 150 psi (10 bar) and vacuums of 28 inches Hg (711 mm), and can withstand temperatures up to

300°F (149°C). It is also field repairable.



3-D Mixer Seal

Featuring a cartridge-style design, the 3-D Mixer Seal compensates for extreme shaft movement, can run dry, and can handle up to 1.000-inch of total indicated runout (TIR), compression and elongation. Custom designed for each application, these seals are rated to 300°F (148.8°C), vacuums of 28 inches Hg (711 mm), and pressures up to 150 psi (10 bar).

Expansion Joints

Highly engineered joints for increased piping safety

Garlock expansion joints offer superior performance, reliability and service life. This in turn improves plant safety and increases the mechanical integrity of equipment.



Style 204

Style 204 expansion joints are designed with a single, abrupt, hallow arch for full vacuum service on the suction side of pumps. Filled arch configurations are also available where concerns of media build-up in the arch are present. It is designed with a seamless tube and available as an FDA compliant EPDM, Neoprene or Nitrile compound. It is also customizable to include extended face to face lengths, offsets and custom drilling patterns.



Style 206 EZ-FLO®

Style 206 EZ-FLO® expansion joints contain a single wide flowing arch designed to eliminate media build up and fluid turbulence. This lightweight design is made with a seamless tube that is available as an FDA compliant EPDM, Neoprene or Nitrile compound. It is also customizable to include extended face to face lengths, offsets and custom drilling patterns.



Style 214/215

These PTFE spool-type flexible couplings are designed to reduce noise and compensate for expansion, contraction and minor piping misalignment in food & beverage processing systems. The multi-laminated convolutions provide flexibility and durability at high temperatures while the FDA compliant PTFE body withstands corrosion, water, steam, and most chemicals and gases. Flanges are available in various grades of stainless steel.



Compression Packing

Cutting edge technology for changing demands

PTFE compression packing is known for its exceptionally high resistance to chemicals and low friction and provides excellent performance in terms of leakage control, service life, and dependability. Garlock's compression packing is rigorously tested to ensure reliable, cost-effective sealing in valves, pumps, agitators and other rotary equipment.



PTFE Packing Style 5904/5906

Style 5904 is made from high purity PTFE filament lubricated with mineral oil – both of which conform to USDA and FDA standards. It is also highly chemical resistant and suitable for use in caustic service. Style 5904 is recommended for use in rotary food processing equipment such as pumps, dryers, blenders, mixers and cookers as well as acidic mining pumps.



PACKMASTER 1

Combination of resilient fibres and PTFE offers a true non-contaminating general service packing - ideal where a clean, reliable packing is required.



PACKMASTER 2

Combination of resilient fibres with petroleum lubricants and graphite to produce an economical general service packing.



PACKMASTER 6

Combination of fine particles of graphite within expanded PTFE and a silicone break-in lubricant.



Style 3535 PTFE Sealant Tape

Ideal for a wide range of applications in almost any media. It is chemically inert, withstands a wide range of chemicals, and conforms to FDA regulations. 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 3 mm to 25 mm.



		3535	
Color	White		
Composition		PTFE Joint Sealant Tape	
Temperature ¹	Maximum Cont: Minimum:	+500°F (+260°C) -450°F (-268°C)	
Pressure¹ psig (bar)			
	Maximum:	798 (55)	
P xT, max. (psig x °F) (bar x °C)	1/32", 1/16" (0.8mm, 1.5mm) 1/8" (3mm)	350,000 (12,000) 250,000 (8,600)	
Sealability (ASTM F37B) ²	(OITIIII)	(0,000)	
ASTM Fuel A	ml/hr	<0.1	
pH Range		0-14	
Flammability		Will not burn	
Bacteria Growth		Will not support	
Tensile Strength across grain (ASTM F152)	psi (N/mm²)	2,150 (15)	
Certifications & Approvals		Shipping Food & Pharmaceutical	
Gas Permeability (DIN 3535-6)	cm³/min	0.05	

Value & Benefits:

- Excellent cost/use ratio
- Superior chemical resistance
- Excellent sealability properties
- Easy to remove from flange faces
- Unlimited shelf life
- Easy to cut and handle, flexible, durable

Ideal for:

- Food processing
- Pharmaceutical
- Chemical processing
- Brewing & distilling
- Pulp & paper
- General industrial use

Rubber Fab

a Garlock Hygienic Technologies company

RubberFab



Standard Gaskets

Rubber Fab's Standard Sanitary Gaskets come in a variety of sizes and elastomers, including Buna, EPDM, FKM, PTFE and Platinum Silicone. Used in both the Food & Beverage and Pharmaceutical Industries, Standard Gaskets are a great solutions to many applications.



TUF-STEEL®

Composed of a unique proprietary blend of PTFE and 316L Stainless Steel, Tuf-Steel® is the choice for leak-proof performance and outstanding durability in steam applications.



TUF-FLEX®

Rubber Fab's Tuf-Flex® sanitary gasket is the world's first unitized gasket, and is setting new standards for purity, performance and flexibility. Tuf-Flex® is specifically designed to meet critical requirements in pharmaceutical, biotechnology, ultrapure water, WFI (water-for-injection).



ANSI-FLEX 150# Gasket

An Ansi-Flex 150# Ansi Flange Gasket's contact surface is PTFE unitized to an EPDM rubber inner core making it strong but flexible, just like our Tuf-Flex® Tri-Clamp Gaskets. This totally bonded construction provides a PTFE gasket with the mechanical characteristics, including memory, of an elastomer gasket with steam resistance. The Ansi-Flex 150# flange gasket has superior and extended service life over standard flange gaskets, making it great for more robust seals and applications.



DETECTOMER®

X-ray inspection and metal detection systems provide confidence to food, dairy and pharmaceutical manufacturers by insuring product safety and integrity as outlined by the Food Safety Modernization Act. Due to it's low conductivity, elastomeric material is often missed by even the strongest detection systems. Developing an effective inspection program to detect contaminants and monitor the consistency and quality of product is important. This helps avoid product waste, recalls, costly down time and customer complaints.



DIN/ISO

Rubber Fab sanitary gaskets for hygienic clamp connections are now available in DIN and ISO dimensions. Our sanitary gaskets are widely used in Pharmaceutical, Biotech, Food, and Beverage applications. Rubber Fab's DIN/ISO sanitary gaskets are in full compliance with FDA and USP Class VI regulations ensuring highest purity, process safety and sealing performance.

CinchSeal

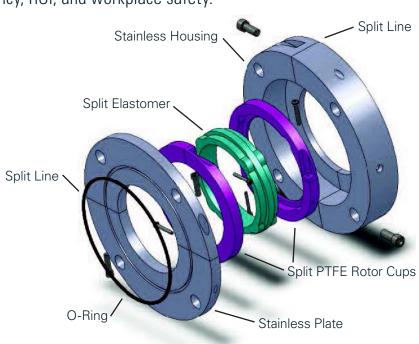


Reliable Rotary Shaft Seals

CinchSeal Rotary Shaft Seals are engineered to prevent product leakage, contamination, and shaft damage. Our globally recognized standard and custom seals have been used by hundreds of food processing companies to increase efficiency, ROI, and workplace safety.

Our Seal Design

Our seals are composed of FDA-approved components including a stainless steel housing, two rotor cups, and a silicon elastomer. The elastomer is molded to a size slightly smaller than the shaft to achieve an interference fit that seals the shaft and prevents material from passing through. This tight fit also drives the two rotor cups, which rotate and press against the stationary stator plates to form the primary seal that prevents product leakage. To maintain a positive seal, the dynamic seals are air purged at a pressure of 5 to 7 psi above the vessel's pressure.



Equipment Compatibility

- Paddle mixers
- Ribbon mixers
- Screw conveyors
- Plough shear mixers
- Bucket elevators
- Extruders
- Augers
- Dryers





CinchSeal



Seals Built for Efficient Food Processing



9700 Model

Simple installation and maintenance. Easy to remove for frequent cleaning.



7800 Series

CEMA seal, ideal for screw conveyors and other bulk handling equipment.



Poly-Split Seals

Build with polyporopylene and stainless steel to handle dry powder and slurry products in the food service industry.



Custom Seals

Seals designed by our engineering team to meet special requirements and functions of your machinery.

Benefits of Sealing with CinchSeal

- Prevent product leakage and waste
- Eliminate the risk of contamination
- Simple to install, clean, and maintain
- FDA Approved
- Eliminate shaft damage that would be caused by other sealing methods
- Reduce maintenance time and costs
- Immediate increase in ROI



Siftex



Flexible Connectors & Supplies

Flexible connectors in a variety of shapes, sizes and materials.

POLYURETHANE:



Clear-Flex SDX
Seamless Tubing, Custom
Connectors, Flat Sheeting



X-Spy Metal/X-Ray Detectable Magnetic Susceptible

Custom Connectors, Screen Cleaning Balls, Gaskets



Better Balls

White Polyurethane Screen Cleaning Balls, X-Spy



Hi-Flex Hose

Wire Exbedded and External Helix Hoses

RUBBER:



Seamless Rubber Tubing

Gum, Neoprene, Silicone, Nitrile, Viton, EPDM, Static Conductive, X-Spy



Better Balls

White Polyurethane Screen Cleaning Balls, X-Spy



Gaskets

Gum, Neoprene, Silicone, Nitrile, Viton, EPDM, Static Conductive, X-Spy



Flat Sheeting

Gum, Neoprene, Silicone, Nitrile, Viton, EPDM, Static Conductive, X-Spy

SIFTSOX FABRIC:

Most popular fabrics: Rubber Coated Nylon, Nylon Satin, Nylon Cordura, PolySilk, Polyester Felt.



Filter Bags



Tubing

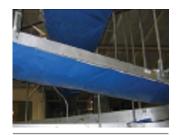


Custom Connectors



DOTRO CATCH CLOTHS:

18oz. vinyl coated polyester and TPU coated ballistic nylon.









Straights

Turns

Funnels

Custom Designs

SLIPFLEX PTFE:

Specialty material for all high temperature, harsh chemical applications.





Tubing

Custom Connectors

BFM FITTINGS:

Seeflex 040E

First US distributor and only flexible connector distributor.







Flexi-Connector



LM4 Connector

PRO ONE



XPL-101 PENETRATING LUBRICANT

No other penetrating lubricant offers XPL+ lubrication technology which protects metal from heat, friction, moisture and the elements, and easily loosens rusted or sticky mechanisms.

We guarantee that once you use this environmentally friendly formula you will never settle for anything else.

XPL-101 Penetrating Lubricant

- Air Tools
- Bolts
- Bushings
- Chains
- Cables
- Electrical Terminals
- Hand Tools
- Hinges
- Ignition Wires
- Levers
- Linkages
- Locks
- Nuts
- Pulleys
- Kitchen Tools
- Wheels
- Bearings
- Fasteners
- Casters
- Knobs
- Pistons

- Gears
- Valve Train
- Oil Pumps
- Latches
- Conveyors
- Drill Bits
- O-Rings
- Fishing Reels
- Springs
- Firearms
- Stamping Tools
- Rollers
- Sliding Doors
- Lock Tumblers
- Mold Release
- Pivot Joints
- Rusted Parts
- Spark Plugs
- Garage DoorsScrew Jacks
- EGR Valves



Benefits

- 50 times more film strength than typical spray lubricants
- Penetrates and bonds to metal
- Reduces friction and heat
- Stops squeaks and reduces noise
- Protectant for air tools
- Frees sticky, corroded rusted parts

- Gun lubricant & cleaner
- Protects metal from rusting
- Displaces water and moisture
- Low VOC
- Non-toxic, environmentally friendly
- Does not contain CFC's

PRO ONE



EP-2 INDUSTRIAL GREASE

Extreme Pressure Performance from -40°F to 615°F

Delivers outstanding extreme pressure protection to help maximize equipment life and performance, and help save energy, even under the harshest conditions. And with no harmful additives, this premium grease is environmentally friendly!

XPL-101 Penetrating Lubricant

NLGI Grade	2
Color	Blue
Thickener	Calcium Complex
Operating temperature range	40°F to 615°F
Kinematic viscosity of base oils @40°C (ASTM 445)	216 cSt (1000 SUS)
Penetration @ 25°C (77°F) (ASTM D-217), mm/10	
Worked 60 strokes	270-295
Mechanical Stability (ASTM D-217) % change from P60	
P100,000 strokes	2.5%
P10,000 strokes with 50% H2O	<6.0%
Dropping Point (ASTM D-2265) °F (°C)	+572 (+300)
Oil Separation (ASTM D-1742) –24 hours @ 25°C (77°)	0.17
Shell Roll Stability (ASTM D-1831)	<4.0%
Oxidation Stability (ASTM D-942) psi drop/500 hours	6.0lbs
Oxidation Bearing Life (ASTM D-3527)	200hours
4-Ball Wear Test (ASTM D-2266)mm scar, 40kg, 1200 RPM	, 75°F, 1H0.42mm
4-Ball EP test (ASTM D-2596) LWI, kg	>75
Weld Load, kgf	600
Timken OK Load (ASTM D-2509) lbs/kg	60/27
Rust test (ASTM D-1743)	Pass
Copper Corrosion test (ASTM D-130)	Pass/1b
Salt Fog Spray (ASTM B-117) hours to failure	>1000 hours
Water Washout (ASTM D-1264) @ 80°C, % loss	<1.42%
Wheel bearing leakage grams (ASTM D-1263)	
Modified @ 163°C (325°F)	0.4
Base Oil Characteristics	
Viscosity SUS @ 100°F	1100
Viscosity SUS @ 210°F	85
Pour Point, °F	+5
V.I. Min	95
NSF	H2

Nonfood Compounds Program Listed H2 (Registration # 142079)



Benefits

- Extreme pressure protection
- Extreme temperature range
- Heavy load carrying capability
- Shear stability
- Oxidation resistant
- Corrosion resistant
- Water resistant
- Reduces noise
- Reduces downtime
- Reduces power consumption
- Cling capability

Brand Partners









Garlock 2/198 Walters Road Arndell Park NSW 2148 Australia

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www.garlock.com

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