

# Garlock

## Non-Asbestos Packings

- Gasketing • Dynamic Seals
- Expansion Joints • Oil Seals
- Fiberglass Cloth



BB 0015463

asbestos-free formulas to comply  
with ●SHA industry standards

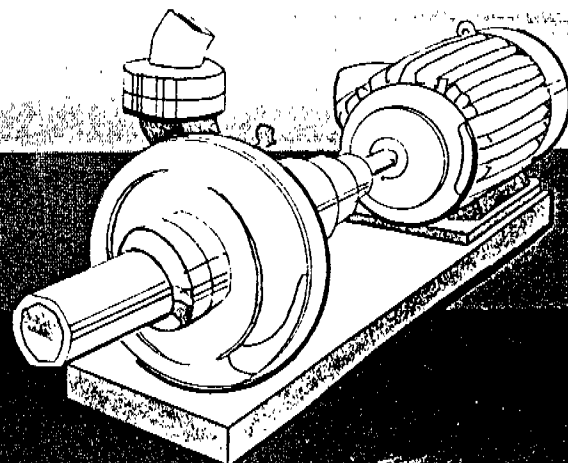
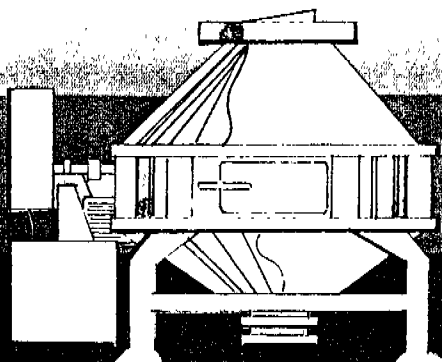
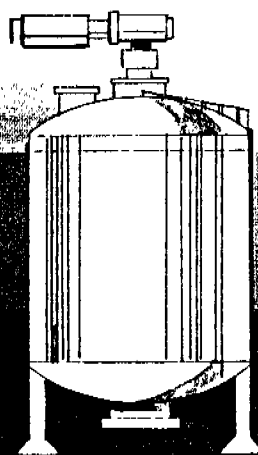
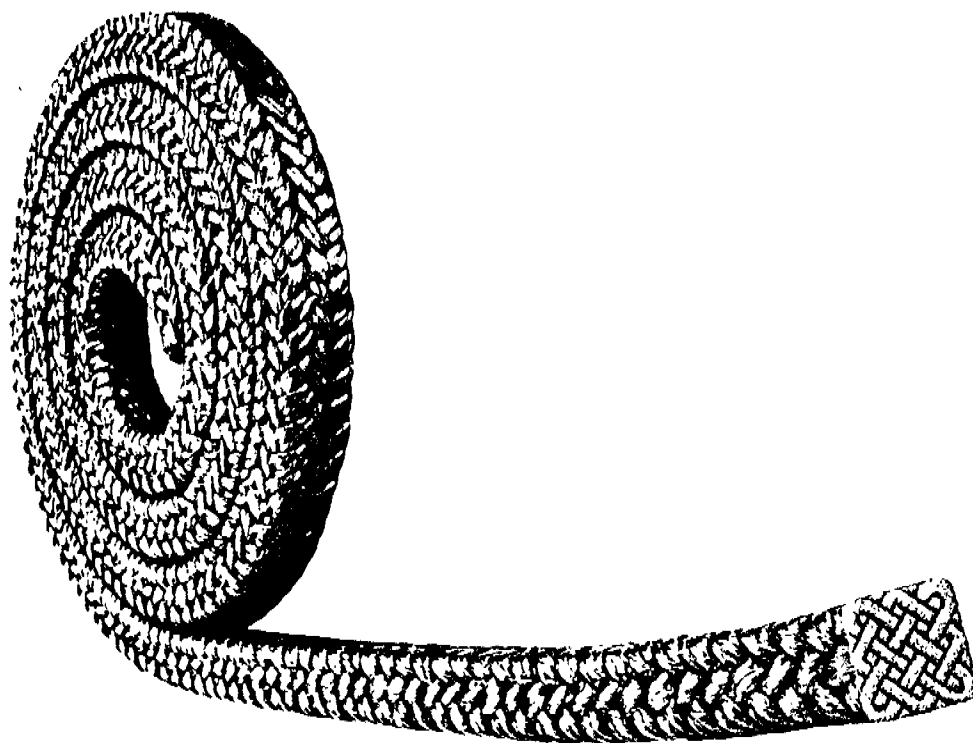
# Garlock®

GARLOCK Inc has long been an innovator in the development of non-asbestos products. Many of these products have been in use for the past decade, providing outstanding performance. Today, many GARLOCK® non-asbestos packings, gaskets and seals are meeting a wide variety of service conditions in the hostile environments of metalworking, hydrocarbon processing, pulp and paper, power generation, marine, transportation, food processing and other industries where effective sealing is vital. Graphitic, PTFE, carbon, aramid and ceramic fibers, to name a few, are staples in the GARLOCK line of products that comply with recent OSHA safety standards. Fabrics, bound with space-age elastomers, provide the capabilities to match fluid, temperature and pressure requirements. Most are unique formulations, compounded to meet the continuing industry demand for extended service in those critical applications where reliability is essential to daily plant operation.

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The GARLOCK non-asbestos packings, gaskets and seals described here are suitable for applications throughout the industrial world. If, however, you would like additional data pertaining to a specific application where asbestos-free sealing seems to be desirable, we urge you to consult your GARLOCK Distributor or your GARLOCK Field Sales Representative. They are skilled problem solvers, and can recommend an asbestos-free packing, gasket or seal to meet your individual requirements.

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## GARLOCK

Names you should know when specifying  
non-asbestos packings...

**GARFITE® 200** A rugged graphite filament braided packing for mineral acid and strong chemical service. Select GARFITE 200 packing for rotary pumps, agitators, mixers, crystallizers, filters, continuous digestors, reciprocating pump rods, valve stems and slip-type expansion joints.

**SERVICE:** Non-oxidizing mineral acids, gases, natural petroleum and synthetic oils, aromatic and aliphatic solvents, steam, water.

**SHAFT SPEEDS:** To 4000 fpm.

**TEMPERATURE:** 345°C (650°F) when air or oxygen present; 650°C (1200°F) in steam.

**PRIME CHARACTERISTICS:** LATTICE BRAID® construction, high thermal conductivity, low coefficient of friction, fast start-up lubricant. Nuclear grade available.

**GARFITE® 100** A premium graphitic packing recommended where a non-contaminating lubrication is required.

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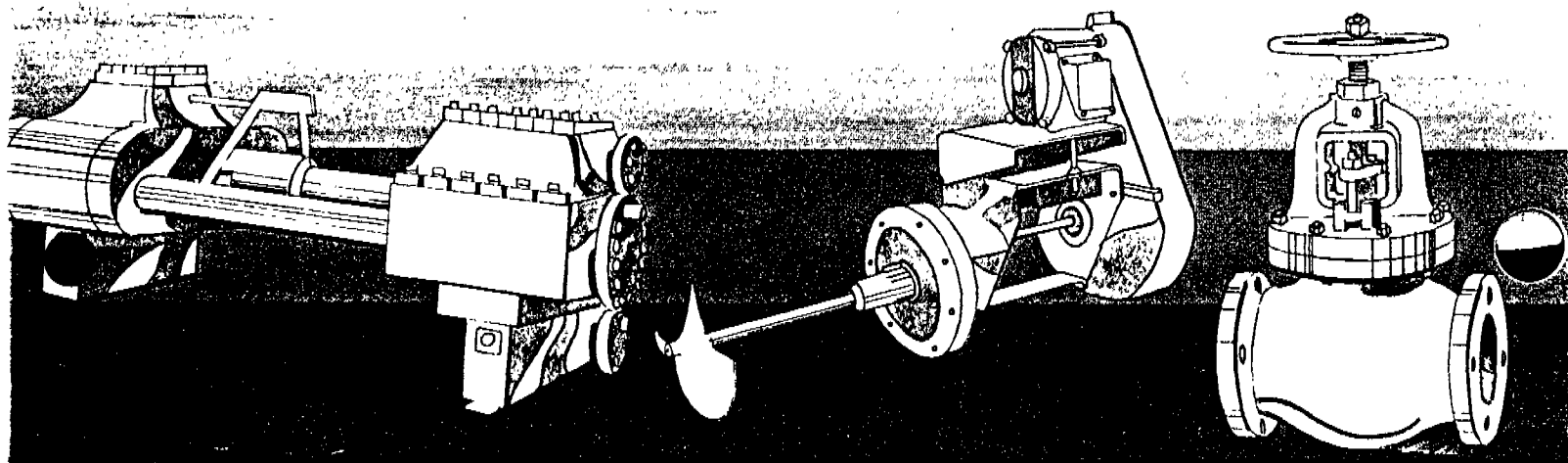
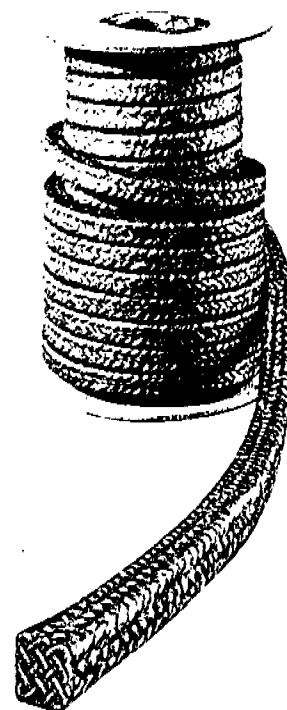
**GARLOCK Style #98** A proven carbon fiber packing that handles the pH range 1-14. A highly recommended packing for high-speed chemical service on pumps, valve stems, agitators in severe processing applications.

**SERVICE:** Acids, strong caustics, hot oils, solvents, boiler feed, MEK.

**SHAFT SPEEDS:** To 3000 fpm.

**TEMPERATURES:** Air or oxygen present 345°C (650°F); 650°C (1200°F) in steam.

**PRIME CHARACTERISTICS:** Lubricated for fast start-up, high thermal conductivity, low coefficient of friction, minimal thermal expansion, LATTICE BRAID construction, more economical than PTFE, nuclear grade available.



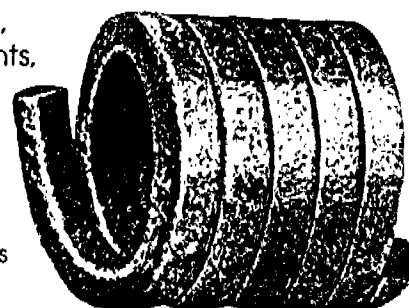
**GARLOCK Style #5000** A non-contaminating carbon fiber braid, impregnated with PTFE and specially lubricated for fast break-in. Recommended when packing pumps and valves in pulp and paper mills, soap and pharmaceutical manufacturing, breweries, food processing plants, and water treatment facilities.

**SERVICE:** Strong caustics, acids, stock, bleach, hypo and slurries.

**SHAFT SPEEDS:** 2200-2400 fpm.

**TEMPERATURES:** To 315°C (600°F).

**PRIME CHARACTERISTICS:** Exceptional strength, lasts far longer than conventional PTFE packings. Chemically inert, full pH range 1-14. Excellent thermal conductivity, assures less product loss and very low abrasion, LATTICE BRAID construction.



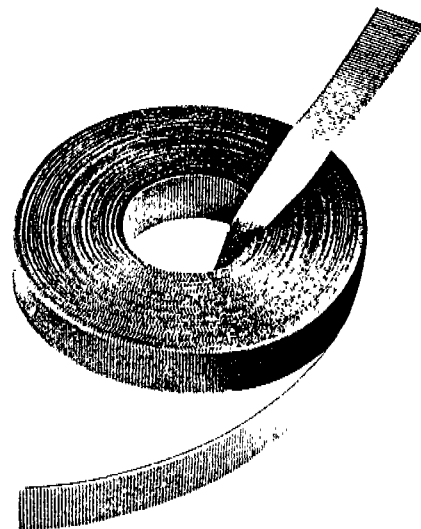
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**GRAPH-LOCK<sup>(R)</sup>** A pure graphite valve stem packing available in textured tape or die-formed rings. Recommended where tight leakage control of contaminating, hazardous, or costly fluids is a must. Install in high and fluctuating temperatures, high pressures, pH range 1-14.

**SERVICE:** Hot water, high temperature steam, chemicals, acids, strong caustics.

**TEMPERATURES:** - 200° C (-328° F) to +500° C (+932° F) in oxidizing media; 3000° C (5432° F) in reducing or inert media.

**PRIME CHARACTERISTICS:** Quick, easy installation, virtually a universal packing in severe heat and chemical applications. Nuclear grade available.



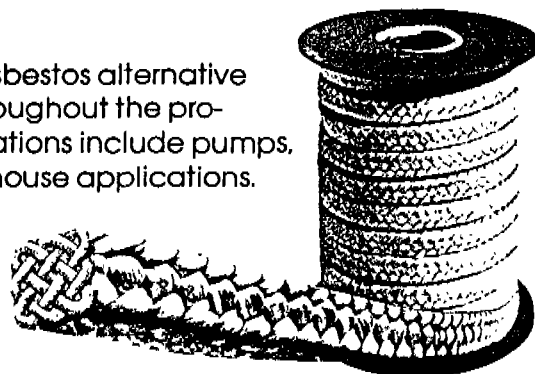
**GARLOCK Style #5200** Our newest yellow, non-asbestos alternative features tough, long-lasting aramid fibers for universal use throughout the processing, steel, textile and power generation industries. Applications include pumps, mixers, reactors, de-waxing units in pH range 3-11 and powerhouse applications.

**SERVICE:** Condensate, fuel oils, weak, mild acids, mild caustics.

**SHAFT SPEEDS:** To 1900 fpm.

**TEMPERATURES:** To 288° C (550° F)

**PRIME CHARACTERISTICS:** Extremely durable, impregnated with PTFE, treated with high temperature lubricant, high tensile strength with no thermal expansion problems. LATTICE BRAID construction.

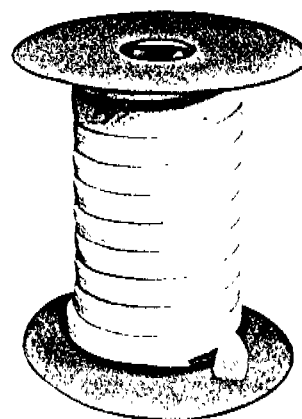


**GARLOCK Style #5889** A soft PTFE filament packing treated with PTFE dispersion and inert lubricant. Recommended for high-speed rotary shafts to 1500 fpm. Specify for valve stems, reciprocating rods, rams, plungers, expansion joints.

**SERVICE:** Universal; acids, alkalis, solvents, most chemicals.

**TEMPERATURES:** -268° C (-450° F) to +260° C (500° F).

**PRIME CHARACTERISTICS:** LATTICE BRAID construction. Dimensionally stable through temperature range, non-toxic, virtually no water absorption.



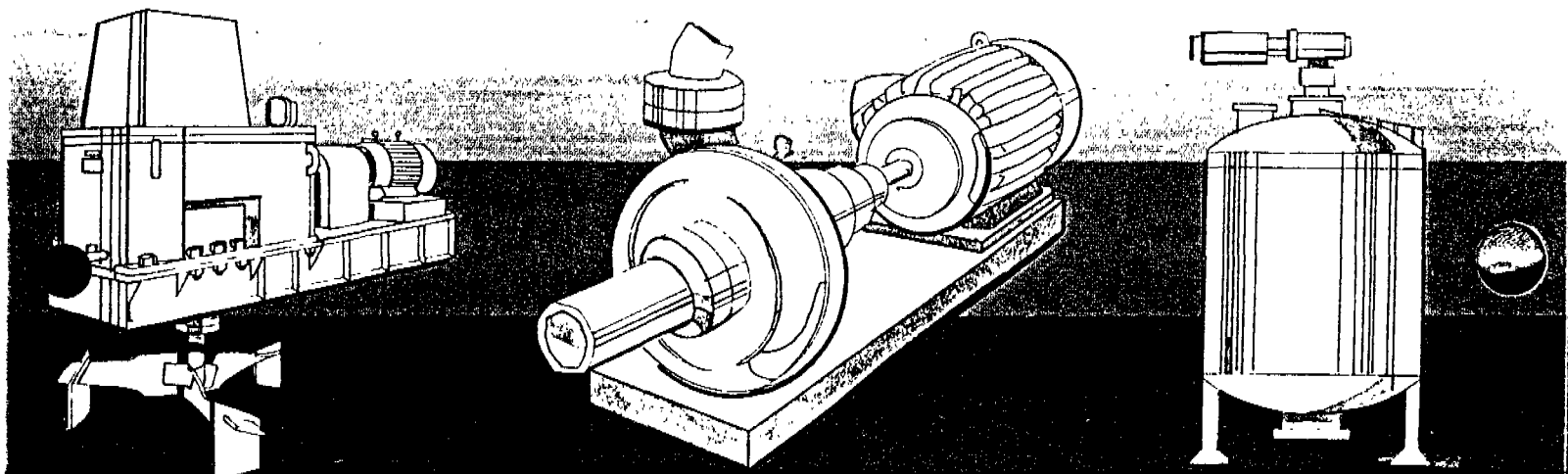
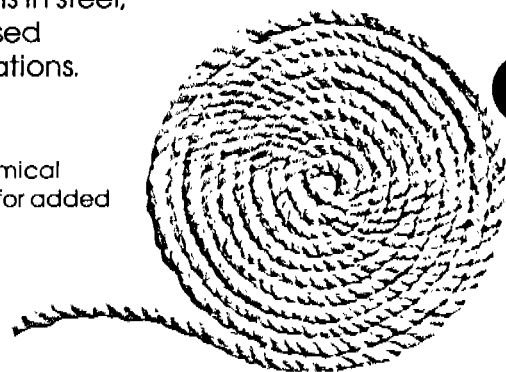
**THERMO-CERAM™** Superior insulating characterizes this new ceramic rope or braided packing for high temperature applications in steel, glass and chemical industries. THERMO-CERAM packing is being used extensively for insulating, sealing, wrapping, and static seal applications.

**SERVICE:** Water, steam, hot oils, most corrosives.\*

**TEMPERATURES:** Continuous to 1260° C (2300° F); 1793° C (3260° F) melt.

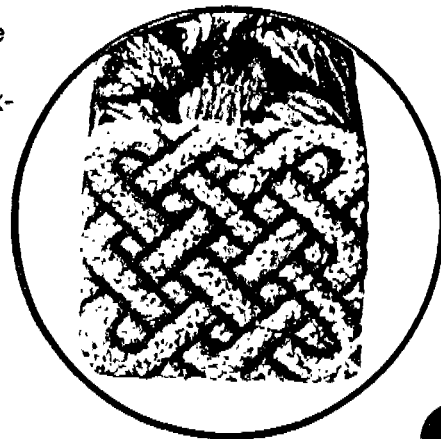
**PRIME CHARACTERISTICS:** Combines good thermal resistance with excellent chemical stability. Can be wire mesh enclosed, fabricated in cloth form, graphite coated for added lubricity. Withstands direct flame impingement.

\*Except hydrofluoric and phosphoric acids and hot, concentrated alkalis



## THE PACKING PLUS FROM GARLOCK

Tough LATTICE BRAID® construction. Developed by GARLOCK to improve packing uniformity and firmness. LATTICE BRAID is a specially developed cross braid, each fiber passing diagonally through the body of the packing, assuring a completely unified structure. Each fiber contributes integrated strength to the total braid, insuring a firm pliable packing that provides exceptional wear. Most GARLOCK non-asbestos packing styles feature LATTICE BRAID construction for longer life in severe service, far beyond the limits of standard packing construction. Those packings included in this brochure are but a few of our most popular styles. Information on other non-asbestos packings, such as elastomers and vegetable fiber packings is available from your GARLOCK Field Sales Representative, or your GARLOCK Distributor.



# GARLOCK

## CHEVRON<sup>®</sup> dynamic seals

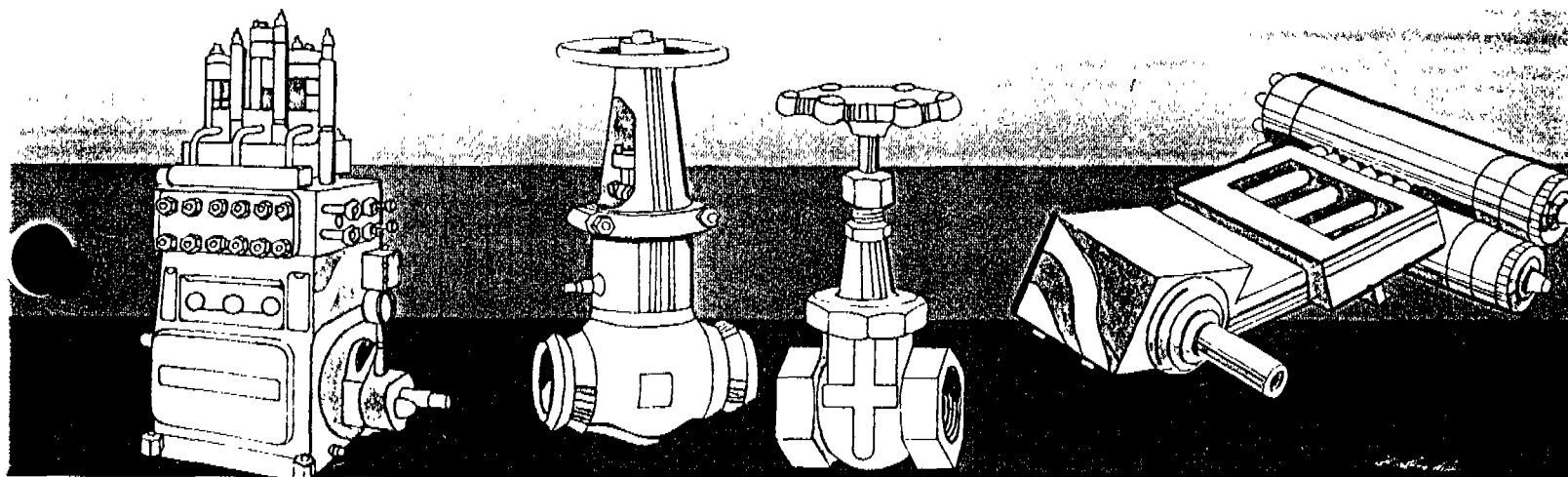
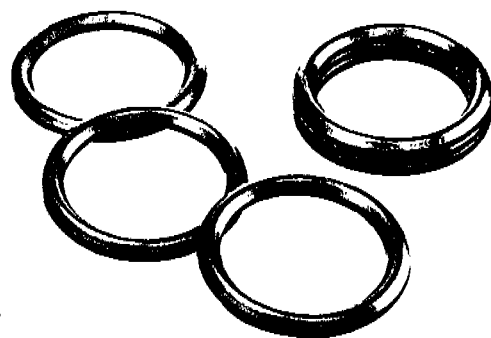
A name you should know when specifying non-asbestos dynamic seals for hydraulic and pneumatic service.

GARLOCK has a wide selection of asbestos-free CHEVRON rings, piston cups and U-seals for automatic sealing of rods, pistons and plungers to meet most service conditions. CHEVRON rings are available in a wide range of materials, assuring a choice of rings that meet your exact fluid, temperature and pressure requirements.

### Typical Applications for Non-Asbestos CHEVRON Rings

Reciprocating Cylinder Rods and Pistons  
Reciprocating Pump Plungers  
Hydraulic Rams  
Valve Stems

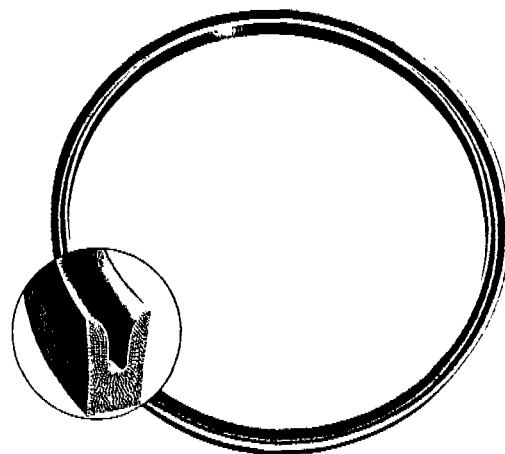
Reciprocating Compressor Rods  
Packers  
Swivels  
Oil Recovery Tools

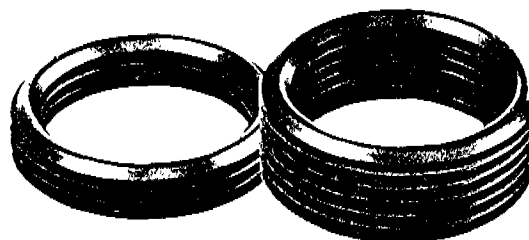
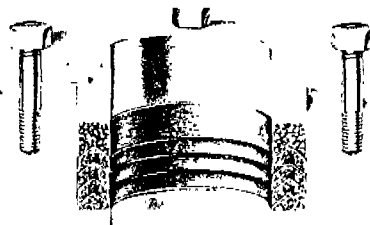


# GARLOCK

**Style #9300** A new fabric and rubber U-seal for general hydraulic service.

GARLOCK STYLE #9300 is the newest non-asbestos U-seal available for oils and water in temperatures to 121°C (250°F). Constructed of a neoprene and nitrile blend with cotton fabric reinforcement, STYLE #9300 is an excellent replacement for standard urethane seals on worn or aged rubber press molding equipment. Its resilient construction automatically fills surface voids and shaft scores. Outperforms urethane in water service when temperatures exceed 60°C (140°F).





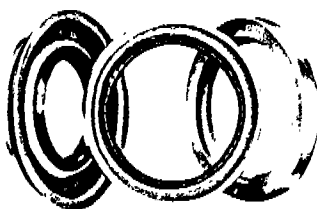
GARLOCK non-asbestos products for hydraulic and pneumatic service are available in ring, cup, U-seal and flange packing forms. The following chart details construction materials and recommended uses around the plant.

| STYLE        | FORM     |     |        |                |                  | MATERIALS OF CONSTRUCTION | RECOMMENDED FOR USE AGAINST                           |       |          |     |                  |          |       |       |              | TEMPERATURE LIMIT |               | RELATIVE HARDNESS | SPECIALY RECOMMENDED FOR |                                                               |
|--------------|----------|-----|--------|----------------|------------------|---------------------------|-------------------------------------------------------|-------|----------|-----|------------------|----------|-------|-------|--------------|-------------------|---------------|-------------------|--------------------------|---------------------------------------------------------------|
| STYLE        | CHEVRON® | CUP | U-SEAL | FLANGE PACKING | EXCLUSION DEVICE | PISTON WEAR RING          | AIR                                                   | ACIDS | ALKALIES | OIL | PHOSPHATE ESTERS | SOLVENTS | STEAM | WATER | WATER-GLYCOL | WATER IN OIL      | Min.          | Max.              |                          |                                                               |
| 79           |          |     |        |                | □                |                           | Steel Cased Polyurethane                              | □     |          | □   |                  |          |       | □     |              | □                 | -58°C (-70°F) | 107°C (225°F)     | Firm                     | Mobile Cylinder, rod scraper                                  |
| 432          | □        |     |        |                |                  |                           | Cotton Duck and Nitrile Elastomer                     |       |          | □   |                  |          |       | □     | □            | □                 | -40°C (-40°F) | 121°C (250°F)     | Firm                     | Oil, water and emulsions, high performance                    |
| 433          | □        |     |        |                |                  |                           | Cotton Duck and Butyl Elastomer                       |       | □        |     | □                |          |       | □     | □            |                   | -40°C (-40°F) | 121°C (250°F)     | Firm                     | Straight phosphate ester fire resistant fluids                |
| 7271         |          | □   |        | □              |                  |                           | Med. Weight Cotton Duck and Neoprene Elastomer        | □     |          | □   |                  |          |       | □     | □            |                   | -40°C (-40°F) | 121°C (250°F)     | Firm                     | Oil and air, medium to high pressure                          |
| 7857<br>8024 | □        |     |        |                |                  |                           | Fine Cotton Duck and SBR Elastomer                    |       | □        | □   | □                | □        |       | □     | □            | □                 | -40°C (-40°F) | 121°C (250°F)     | Rockhard                 | Oil and water service, very high pressure - plunger pumps     |
| 8025         | □        |     |        |                |                  |                           | Fine Cotton Duck and Neoprene Elastomer               | □     |          | □   |                  |          |       | □     | □            |                   | -40°C (-40°F) | 121°C (250°F)     | Firm                     | Oil and water service, medium pressure - plunger pumps        |
| 8064         | □        |     |        |                |                  |                           | Cotton Duck and SBR Elastomer                         |       |          |     |                  |          |       | □     | □            |                   | -40°C (-40°F) | 121°C (250°F)     | Firm                     | Water service - plunger pumps                                 |
| 8140<br>8150 | □        |     |        |                |                  |                           | Fine Polyester and Cotton Duck with Nitrile Elastomer |       | □        | □   |                  |          |       | □     | □            | □                 | -40°C (-40°F) | 121°C (250°F)     | Firm                     | General hydraulic oils, water emulsions - plunger pumps       |
| 8455         | □        | □   | □      |                |                  |                           | Homogeneous Silicone                                  | □     | □        | □   | □                | □        |       | □     | □            | □                 | -58°C (-70°F) | 260°C (500°F)     | Flex                     | All fluids but strong acids and alkalies                      |
| 9003         | □        |     |        |                |                  | □                         | G.F. Nylon                                            | □     |          | □   | □                |          |       | □     | □            | □                 | -54°C (-65°F) | 149°C (300°F)     | Hard                     | Mobile cylinder, piston or rod bearing, CHEVRON adaptors only |
| 9210         | □        | □   |        |                | □                |                           | Polyurethane                                          | □     |          | □   |                  |          |       | □     |              | □                 | -58°C (-70°F) | 93°C (200°F)      | Firm to Flex             | Oil, air, water and emulsions. Low to high pressure           |
| 9220         |          |     | □      |                |                  |                           | Polyurethane Elastomer                                | □     |          | □   |                  |          |       | □     |              | □                 | -58°C (-70°F) | 107°C (225°F)     | Firm to Flex             | Oil, air, warm water low to high pressure                     |
| 9300         |          |     | □      |                |                  |                           | Cotton Duck and Neoprene, Nitrile Elastomer           |       |          |     |                  |          |       |       |              |                   | -40°C (-40°F) | 121°C (250°F)     | Firm                     | General hydraulic oils, water and emulsions                   |

## GARLOCK KLOZURE<sup>®</sup> oil seals

GARLOCK manufactures a complete line of assembled and bonded oil seals, all asbestos-free. These include single lip, dual lip, split and special purpose styles designed for shafts from 1/4" to 60" metal-encased KLOZURE styles, and 3"-120" in split styles.

You'll find a specific GARLOCK oil seal for all service conditions, including severe.



## Split KLOZURE<sup>®</sup> oil seals

Specify for quick, easy installation on large shafts. Split construction minimizes costly tear down time when seals need to be replaced. For the majority of applications, many single lip, dual lip and split KLOZURE styles are available from stock.



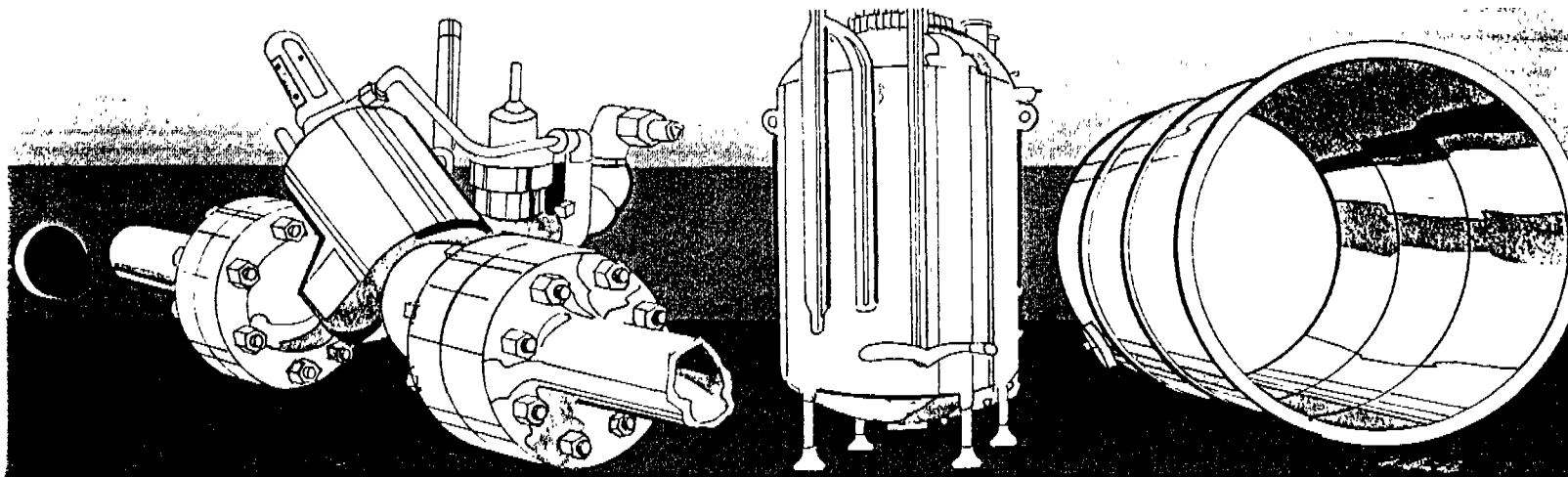
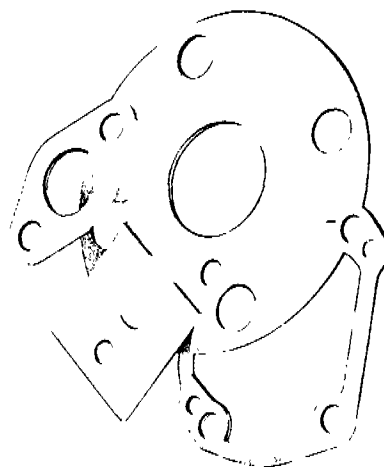
**GARLOCK manufactures a variety of asbestos-free gaskets and gasketing materials**

## **GYLON<sup>®</sup> gasketing material**

**The name you should know when specifying asbestos-free gasketing for most industrial and marine applications.**

GYLON all-purpose gasketing is an excellent replacement gasket in chemical service, particularly at elevated temperatures and pressures. GYLON material is being recommended increasingly as a direct replacement for PTFE, envelope and spiral wound gaskets. Its prime characteristics include low compression set with excellent recovery, and a high resistance to creep and cold flow under pressure, minimizing maintenance requirements.

GYLON gasketing material exhibits a wide range of service temperatures. -214°C (-350°F) to +260°C (+500°F). It's recommended for most liquid, steam or gas applications. GYLON material is used extensively for pipe line gasketing, pumps, valves, boilers, vessels, reactors and a host of other applications where severe conditions exist.

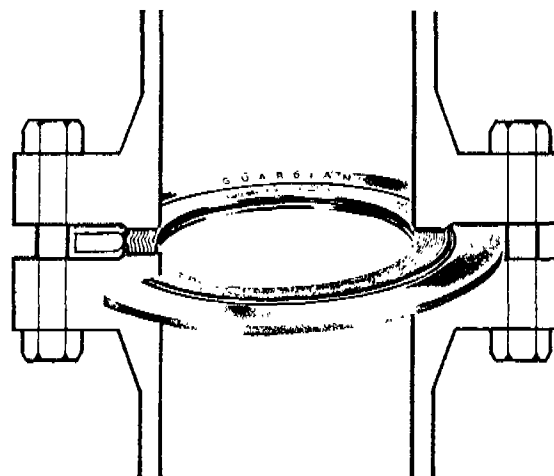


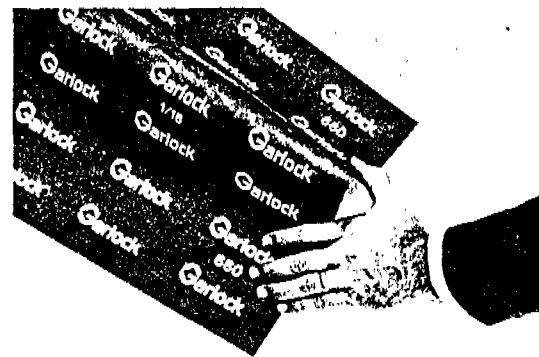
## **GARLOCK**

### **GUARDIAN<sup>®</sup> Spiral Wound Gaskets**

**Non-asbestos construction for pipe flanges, pressure vessels, manholes, handholes, tube caps.**

GARLOCK manufactures spiral wound gaskets for most industrial applications in service against steam, oils, gases, and most liquids, including chemicals. Asbestos-free fillers include PTFE, GRAPH-LOCK and PYROFIL<sup>™</sup> ceramic paper for handling cryogenic to the increasingly high temperature applications found in power plants, marine applications, aircraft, missiles, pulp and paper, food processing, chemical and refining operations.





## Sheet Gasketing

Other non-asbestos gasketing materials offered by GARLOCK include premium grade rubber in homogeneous sheets, fabric reinforced rubber sheets, vegetable fiber sheet and rubber diaphragm materials. Each is compounded to meet specific service conditions. The following chart provides a basic guide to your choice and selection of gasketing when the service requires non-asbestos materials.

| PRODUCT            | BASIC<br>COMPOSITION<br><br>■ Preferred<br>□ Satisfactory<br>NA (Not Applicable) | STYLE | Hardness, Durometer | MEDIA |           |               |           |                  |                             |           |                     |                       |                        |                           |       |                       |                                            |               | COMMENTS |
|--------------------|----------------------------------------------------------------------------------|-------|---------------------|-------|-----------|---------------|-----------|------------------|-----------------------------|-----------|---------------------|-----------------------|------------------------|---------------------------|-------|-----------------------|--------------------------------------------|---------------|----------|
|                    |                                                                                  |       |                     | Acids |           | Alka-<br>lies |           | Gases            |                             | Oils      |                     | Solvents              |                        | Refrigerants, Halocarbons | Steam | Water & Salt Solution | Fluid Where Non-<br>Contamination Required |               |          |
|                    |                                                                                  |       |                     | Mild  | Corrosive | Mild          | Corrosive | Air & Dry Indus. | Bromine, Chlorine<br>Oxygen | Petroleum | Synthetics, Diester | Aromatic (Ben., etc.) | Aliphatic (Gas., etc.) |                           |       |                       |                                            |               |          |
|                    |                                                                                  |       |                     |       |           |               |           |                  |                             |           |                     |                       |                        |                           |       |                       |                                            |               |          |
| Homogeneous Rubber | Natural Rubber                                                                   | 6023  | 35                  | □     | □         | □             |           |                  |                             |           |                     |                       |                        |                           | □     | ■                     | Soft Tan Gum Rubber                        |               |          |
| Homogeneous Rubber | SBR                                                                              | 152   | 50                  | □     | □         | □             |           |                  |                             |           |                     |                       |                        |                           |       | ■                     |                                            |               |          |
| Homogeneous Rubber | SBR                                                                              | 91    | 60                  | □     | □         | □             |           |                  |                             |           |                     |                       |                        |                           |       | ■                     |                                            |               |          |
| Homogeneous Rubber | SBR                                                                              | 22    | 80                  | □     | □         | □             |           |                  |                             |           |                     |                       |                        |                           |       | ■                     | ■                                          |               |          |
| Homogeneous Rubber | SBR                                                                              | 353   | 80                  | □     | □         | ■             |           |                  |                             |           |                     |                       |                        |                           | □     |                       |                                            |               |          |
| Homogeneous Rubber | Neoprene                                                                         | 8312  | 50                  | □     | □         | □             |           |                  |                             | ■         |                     | ■                     |                        | □                         | □     |                       |                                            |               |          |
| Homogeneous Rubber | Neoprene                                                                         | 7986  | 60                  | □     | □         | □             |           |                  |                             | ■         |                     | ■                     |                        | □                         | □     |                       |                                            |               |          |
| Homogeneous Rubber | Neoprene                                                                         | 8639  | 70                  | □     | □         | □             | □         |                  |                             | □         |                     | □                     |                        | □                         | □     |                       |                                            |               |          |
| Homogeneous Rubber | Neoprene                                                                         | 7797  | 80                  | ■     | □         | ■             | ■         |                  |                             | ■         |                     | ■                     |                        | ■                         | □     |                       |                                            |               |          |
| Homogeneous Rubber | Nitrile                                                                          | 9122  | 60                  | □     | □         | □             | □         |                  |                             | □         | □                   | ■                     | □                      |                           | □     |                       |                                            |               |          |
| Homogeneous Rubber | Nitrile                                                                          | 8495  | 70                  | □     | □         | □             | □         |                  |                             | □         | □                   | □                     | □                      |                           | □     |                       |                                            |               |          |
| Homogeneous Rubber | Nitrile                                                                          | 8459  | 80                  | □     | □         | ■             | ■         |                  |                             | ■         | ■                   | ■                     | □                      |                           | □     |                       |                                            |               |          |
| Homogeneous Rubber | EPDM                                                                             | 9712  | 50                  | ■     | □         | ■             | ■         |                  |                             |           |                     |                       |                        | □                         | □     |                       | Excellent Ozone Resistance                 |               |          |
| Homogeneous Rubber | EPDM                                                                             | 8314  | 60                  | ■     | □         | ■             | ■         |                  |                             |           |                     |                       |                        | □                         | □     |                       | Excellent Ozone Resistance                 |               |          |
| Homogeneous Rubber | CPE                                                                              | 8752  | 70                  | ■     | □         | □             | □         |                  |                             | ■         |                     | ■                     |                        | □                         | □     |                       | Excellent Oil & Ozone Resistance           |               |          |
| Reinforced Rubber  | SBR Rubber, 12-oz. Cotton Chafer                                                 | 19    | 80                  |       |           |               | □         |                  |                             |           |                     |                       |                        |                           | ■     |                       | ½"; uses 5-oz. Cotton Sheeting             |               |          |
| Diaphragm          | SBR Rubber, 22-oz. Hose Duck                                                     | 619   | 50                  |       |           |               | □         |                  |                             |           |                     |                       |                        |                           | ■     |                       | Heavy Cotton Reinforcement                 |               |          |
| Diaphragm          | Neoprene, 22-oz. Hose Duck                                                       | 7992  | 50                  |       |           |               | ■         |                  |                             |           |                     |                       |                        |                           | □     |                       | Heavy Cotton Reinforcement                 |               |          |
| Diaphragm          | Neoprene, 13-oz. Nylon                                                           | 8798  | 50                  |       |           |               | ■         |                  |                             | ■         |                     |                       |                        |                           | □     |                       | Prime General Duty                         |               |          |
| Diaphragm          | Nitrile, 4.5-oz. Nylon                                                           | 9205  | 50                  |       |           |               | □         |                  |                             | ■         | □                   |                       |                        |                           | □     |                       | Very Sensitive                             |               |          |
| Vegetable Fiber    | Cellulose Fiber, Cork, Glue, Glyc.                                               | 660   | NA                  |       |           |               | □         |                  |                             | ■         | □                   | □                     | □                      | □                         |       |                       | Soft, Resilient, Non-water                 |               |          |
| Vegetable Fiber    | Cellulose Fiber, Glue, Glycerine                                                 | 681   | NA                  |       |           |               | □         |                  |                             | ■         | □                   | □                     | □                      | □                         |       |                       | Firm, Non-water                            |               |          |
| TFE                | TFE plus Inert Filler                                                            | GYLON | NA                  | □     | ■         | ■             | ■         | □                | ■                           | ■         | □                   | □                     | ■                      | ■                         | □     | □                     | ■                                          | Low Cold Flow |          |

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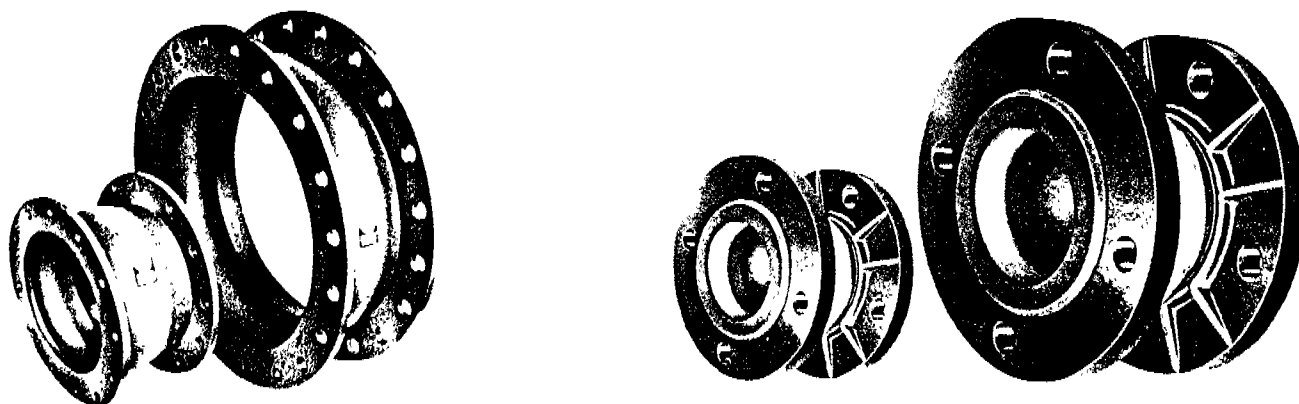
## **GARLOCK asbestos-free expansion joints**

When specifying non-asbestos expansion joints or pump connectors, GARLOCK GARFLEX® and EZ-FLO™ joints are among the most recent developments in high temperature service for piping requirements.

**EZ-FLO\*** New flowing arch design assures quiet fluid flow, eliminates entrapment of slurry materials. Recommended for continuous temperatures to 121°C (250°F), standard liners and covers in chlorobutyl, natural rubber and neoprene available. Tough tire cord construction is far stronger, and provides more movement capability than conventional joint designs. For hot and cold water, mild acid service.

\*Approved for U.S. Navy Government specifications MIL-15330D

**GARFLEX®** The ideal joint to choose when upgrading a piping system. GARFLEX joints feature a ball-shaped elastomeric bellows reinforced with tough nylon tire cord for exceptional safety and movement control. Flowing arch design, for temperatures to 110°C (230°F). Specify GARFLEX joints for a broad range of high pressures, high temperature systems. Especially recommended for hot and cold water, mild acids, and for new jobs where close coupled construction is required.

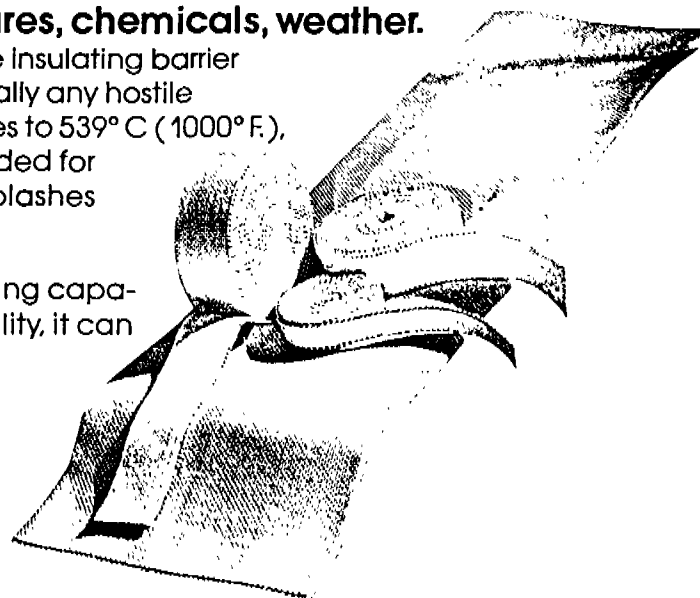


## **GARLOCK** **Textured woven fiberglass cloth and tape** **THERMO-SIL™**

**Asbestos-free... resists high temperatures, chemicals, weather.**

THERMO-SIL fiberglass cloth provides a tough, safe insulating barrier against fire and flame, heat and cold, noise, virtually any hostile environment. Suitable for continuous temperatures to 539°C (1000°F). THERMO-SIL fiberglass cloth is highly recommended for curtains and blankets to guard against metal splashes and to provide heat barriers.

THERMO-SIL fabric contains a special heat resisting capability. Because of its low conductivity and durability, it can be used in a wide variety of applications, such as gasketing and expansion joints. Your GARLOCK representative will answer any questions you may have regarding the suitability of THERMO-SIL non-asbestos fabric for specialized use.



**Colt Industries**



**Garlock**

**Mechanical Packing Division**

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