

Garlock Extreme Grade Compressed Gasketing

Garlock's Extreme Grade gasketing materials are made of graphite, carbon or inorganic fibers with a choice of NBR or SBR binders. Extreme Grade gaskets have world-class sealability helping to improve operational performance and comply with stringent environmental requirements. All Garlock Extreme grade products are available with a revolutionary Flange-Free™ anti-stick that helps cut maintenance costs and reduce downtime.

www.flangefree.com



Media

- 9900:** Saturated steam*, water, inert gases, aliphatic hydrocarbons, oils, gasoline, and most refrigerants
- 9800:** Saturated steam*, water, and inert gases
- 9850:** Water, saturated steam*, aliphatic hydrocarbons, oils, gasoline, most refrigerants
- 706:** Saturated and super heated steam*, oils, grease, water and heat transfer fluids**

Notes:

* Above 150 psig, contact Engineering.

** Contact Garlock Engineering with specific transfer fluid application.



www.flangefree.com

Garlock

SEALING TECHNOLOGIES®

an EnPro Industries company

Value & Benefits

9900

- Graphite fiber gasketing withstands extreme temperatures and pressures, as well as many chemicals
- Passed Garlock Fire tests, and is ABS Fire Safe Type Approved

9800/9850

- Carbon fiber gasketing excels in harshest conditions — intense heat, high pressure, saturated steam and hot oils
- Laboratory-tested for fire safety
- Maintains effective seal during pressure and temperature fluctuations

706

- Inorganic, asbestos-free fibers offer superior performance in saturated and superheated steam
- Ideal for standard ANSI flange connectors, as well as turbine crossover piping connectors
- Multiple applications in power generation, chemical processing, hydrocarbon processing, and other industries

Typical Physical Properties*

	9900 ⁴	9800 ⁴	9850 ⁴	706
Color	Mahogany	Black	Black	White
Composition	Graphite with nitrile	Carbon with SBR	Graphite with nitrile	Nitrile (NBR)
Temperature ¹				
Maximum	+1,000°F (+540°C)	+900°F (+480°C)	+900°F (+480°C)	+1,000°F (+540°C)
Minimum	-100°F (-75°C)	-100°F (-75°C)	-100°F (-75°C)	-100°F (-75°C)
Continuous max.	+650°F (+340°C)	+650°F (+340°C)	+650°F (+340°C)	+650°F (+340°C)
Pressure, max. ¹	2,000 (138)	2,000 (138)	2,000 (138)	1,200 (83)
P x T, max. ¹ (psig x °F) 1/32", 1/16" (bar x °C) (0.8mm, 1.6 mm)	700,000 (25,000)	700,000 (25,000)	700,000 (25,000)	700,000 (25,000)
1/8" (3.2 mm)	350,000 (12,000)	350,000 (12,000)	350,000 (12,000)	500,000 (18,500)
Sealability (ASTM F37B) ²				
ASTM Fuel A	0.1	0.1	0.1	0.5
Nitrogen	0.1	0.1	0.1	4.0
Gas Permeability (DIN 3535 Part 4) ³	0.015	0.015	0.015	-
Creep Relaxation (ASTM F38) %	9	15	15	18
Compressibility Range (ASTM F36) %	7-17	7-17	7-17	7-17
Recovery (ASTM F36) %	> 65	> 55	> 56	> 50
Tensile Strength across grain (ASTM F152)	1,800 (12)	1,500 (10)	1,800 (12)	1,400 (9)
Fluid Resistance (ASTM F146 @ 5 hours)				
ASTM #1 Oil at +300°F (+150°C)	0-5	0-10	0-5	0-10
Thickness increase %	< 10	< 20	< 10	< 15
Weight increase %				
ASTM IRM #903 Oil at +300°F (+150°C)	0-10	15-30	0-10	0-15
Thickness increase %	< 35	< 65	< 35	< 55
Tensile loss %				
ASTM Fuel A at +70-85°F (+20-30°C)	0-5	0-10	0-5	0-15
Thickness increase %	< 7	< 20	< 7	< 20
Weight increase %				
ASTM Fuel B at +70-85°F (+20-30°C)	0-10	5-20	0-10	0-20
Thickness increase %	< 15	< 20	< 15	< 20
Weight increase %				
Density 1/16" (1.6 mm) thick lbs/ft ³ (g/cm ³)	110 (1.76)	105 (1.68)	105 (1.68)	105 (1.68)

Notes:

- Based on ANSI RF flanges at our preferred torque. When approaching maximum pressure, continuous operating temperature, minimum temperature or 50% of maximum P x T, consult Garlock Engineering.
- ASTM F37B Sealability, milliliters/hour (1/32" thickness ASTM Fuel A (isooctane): Gasket load = 500 psi (3.5 N/mm²), Internal pressure = 9.8 psig (0.7 bar) Nitrogen: Gasket load = 3,000 psi (20.7 N/mm²), Internal pressure = 30 psig (2 bar)
- DIN 3535 Part 4 Gas Permeability, cc/min. (1/16" thick) Nitrogen: Gasket load = 4,640 psi (32 N/mm²), Internal pressure = 580 psig (40 bar)
- Saturated steam service guidelines:
 - For optimal performance, use thinner gaskets when possible.
 - Minimum recommended assembly stress = 4,800 psi.
 - Preferred assembly stress = 6,000 psi to 10,000 psi.
 - Retorque the bolts/studs prior to pressurizing the assembly. Never retorque a pressurized assembly.
 - If the service is superheated steam, contact Applications Engineering.

This is a general guide and should not be the sole means of selecting or rejecting this material. ASTM test results in accordance with ASTM F-104; properties based on 1/32" (0.8mm) sheet thickness.

* Values do not constitute specification limits

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

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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.

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