



## Garlock BLUE-GARD® 3400

### MATERIAL PROPERTIES\*

<b>Color:</b>	Grey-black
<b>Composition:</b>	Aramid fibers with a SBR binder
<b>Fluid Services<sup>1</sup>:</b>	Water, saturated steam <sup>3</sup> , inert gases
<b>Temperature<sup>2</sup>, °F (°C)</b>	
Minimum:	-100 (-73)
Continuous Max:	+400 (+205)
Maximum:	+700 (+371)
<b>Pressure<sup>2</sup>, Maximum, psig (bar):</b>	1200 (83)
<b>P x T (max.)<sup>2</sup>, psig x °F (bar x °C)</b>	
1/32 and 1/16":	350,000 (12,000)
1/8":	250,000 (8,600)

### TYPICAL PHYSICAL PROPERTIES\*

<b>ASTM F36</b>	<b>Compressibility, range, %:</b>	7-17
<b>ASTM F36</b>	<b>Recovery, %:</b>	50
<b>ASTM F38</b>	<b>Creep Relaxation, %:</b>	18
<b>ASTM F152</b>	<b>Tensile, Across Grain, psi (N/mm<sup>2</sup>):</b>	2250 (15)
<b>ASTM F1315</b>	<b>Density, lbs./ft.<sup>3</sup> (grams/cm<sup>3</sup>):</b>	100 (1.60)
<b>ASTM F433</b>	<b>Thermal Conductivity (K), W/m<sup>2</sup>K (Btu.-in./hr.-ft.<sup>2</sup>.°F):</b>	0.29-0.38 (2.00-2.65)
<b>ASTM D149</b>	<b>Dielectric Properties, range, volts/mil.</b>	
	Sample conditioning	1/16"      1/8"
	3 hours at 250°F:	603      422
	96 hours at 100% Relative Humidity:	101      58
<b>ASTM F586</b>	<b>Design Factors</b>	<b>1/16" &amp; Under      1/8"</b>
	"m" factor:	3.5      6.6
	"y" factor, psi (N/mm <sup>2</sup> ):	2100 (14.5)      3000 (20.7)
<b>ASTM F104</b>	<b>Line Call Out:</b>	<b>F712902A9B4E45K5L102M9<sup>(4)</sup></b>

### SEALING CHARACTERISTICS\*

	<b>ASTM F37B Fuel A</b>	<b>ASTM F37B Nitrogen</b>	<b>DIN 3535- 4 Gas Permeability</b>
<b>Gasket Load, psi (N/mm2):</b>	500 (3.5)	3000 (20.7)	4640 (32)
<b>Internal Pressure, psig (bar):</b>	9.8 (0.7)	30 (2)	580 (40)
<b>Leakage</b>	<b>0.1 ml/hr.</b>	<b>0.4 ml/hr.</b>	<b>0.03 cc/min</b>

### IMMERSION PROPERTIES\* - ASTM F146 Fluid Resistance after Five Hours

	<b>ASTM #1 Oil 300°F (150°C)</b>	<b>ASTM IRM #903 300°F (150°C)</b>	<b>ASTM Fuel A 70-85°F (20-30°C)</b>	<b>ASTM Fuel B 70-85°F (20-30°C)</b>
<b>Thickness Increase, (%)</b>	0-10	15-30	0-15	5-20
<b>Weight Increase, (%)</b>	<20	-	<25	<30
<b>Tensile Loss, (%)</b>	-	<70	-	-

#### Notes:

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 unless otherwise mentioned.

\* Values do not constitute specification Limits

<sup>1</sup> See Garlock chemical resistance guide.

<sup>2</sup> 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 Applications Engineering. Minimum temperature rating is conservative.

<sup>3</sup> These styles are not preferred choices for steam service, but are successful when adequately compressed. Minimum recommended assembly stress = 4,800psi. Preferred assembly stress = 6,000-10,000psi. Gasket thickness of 1/16" strongly preferred. Retorque the bolts/studs prior to pressurizing the assembly. For saturated steam above 150psig or superheated steam, consult Hanna Rubber Company.

<sup>4</sup> Fourth numeral 9: % Thickness Increase in IRM Oil #903 = 25-50% max. A9: Leakage in Fuel A (Isocetane), Gasket Load = 500psi (3.5N/mm2), Pressure = 9.8psig (0.7bar): Typical = 0.1ml/hr, Max = 1.0ml/hr. A9: Leakage in Nitrogen, Gasket Load = 3,000psi (20.7N/mm2), Pressure = 30psig (2bar): Typical = 0.4ml/hr, Max = 1.0ml/hr. M9: Tensile Strength = 2,250psi min. (15N/mm<sup>2</sup> min.).