Garlock
an EnPro Industries family of companies

THERMa-PUR™ Family

FC, CMG, KAMM, Spiral Wound

Leaders in Sealing Integrity

THERMa-PUR® Style 4122

FC, CMG, KAMM, Spiral Wound

THERMa-PUR® is designed for use in high temperature sealing applications. It is produced using an environmentally friendly solvent-free process and combines a unique formulation with Garlock's traditional quality.

THERMa-PUR® is yet another innovative Garlock sealing solution that provides more than just temperature resistance.

VALUE & BENEFITS

Extreme Temperature
» Able to withstand high temperature, whether continuous or in thermal cycling conditions

Oxidation Resistance
» Contains proprietary materials that provide improved weight loss characteristics over other high temperature solutions. (see graph)

Hydrophobic Properties & Electrically Insulating (except spiral wound)
» Resists water and provides electrical isolation thus reducing the possibility of corrosion between flanges made of dissimilar metals

Easy Release from Flanges
» Does not stick to flanges making removal of gaskets easy and fast

Chemical Resistance
» Proprietary fomulation is resistant to a broad range of chemicals: Titanium Tetrachloride, molton salts and other heavy oxidizers

Safer Handling (4122-FC)
» Patent-pending fiber core makes gaskets safer to handle when compared to traditional high temperature gaskets with steel cores

IDEAL FOR

» Marine and Land-based Exhaust Systems
» Biomass Gasification Process
» Oil and Gas Production
» Mineral and Fertilizer Processing
» Incineration Process
» Co-generation Systems
» Turbochargers Equipment
» Process Drying Equipment

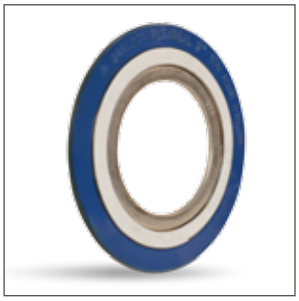
CONFIGURATIONS

Available in:
» Standard Flexseal Spiral Wound Configurations: RW/RWI/SW/SWI
» Standard Flexseal Spiral Wound Configurations with facing material on the winding faces
» Corrugated metal core
» Serrated metal core
» Cut gasket
» Sheet

SPIRAL WOUND SPECIFICATIONS

Chemical Compatibility	Please consult Applications Engineering
Temperature	Continuous Max. +1,832ºF (+1,000ºC)
Gasket Factor 'M'	3.0
Gasket Factor 'Y'	10,000

Cut Gasket
(4122-FC)



Garlock Flexseal®
(4122-SW)

Corrugated Metal Gasket
(4122-CMG)

Kammprofile
(4122-KAMM)

TYPICAL PHYSICAL PROPERTIES (FC, CMG, KAMM)

Temperature	Continuous max.	+1832°F (1000°C)
Pressure[1] psig (bar)	4122-FC	500 (34.5)
	4122-CMG	1000 (68.9)
	4122-KAMM	Equal to flange rating
P x T, max.[2]	4122-FC	150,000 (5,100)
psig x °F (bar x °C)	4122-CMG	600,000 (21,500)
	4122-KAMM	Equal to flange rating
Typical Physical Properties for 4122-FC*:		
ASTM Test Method F36		
Compressibility, range, %		35-45
Recovery %		18
ASTM F38		
Creep Relaxation, %		25
ASTM F152		
Tensile, w/insert, psi (N/mm²)		1,200 (8.3)
ASTM F1315		
Density, lbs./ft³ (grams/cm³)		85 (1.36)
ASTM D149		
Dielectric Properties, volts/mil.		100

NOTES:

1. Based on ANSI RF flanges at our preferred torque. When approaching maximum pressure, continuous operating temperature, minimum temperature or 50% of maximum PxT, consult Garlock Engineering.

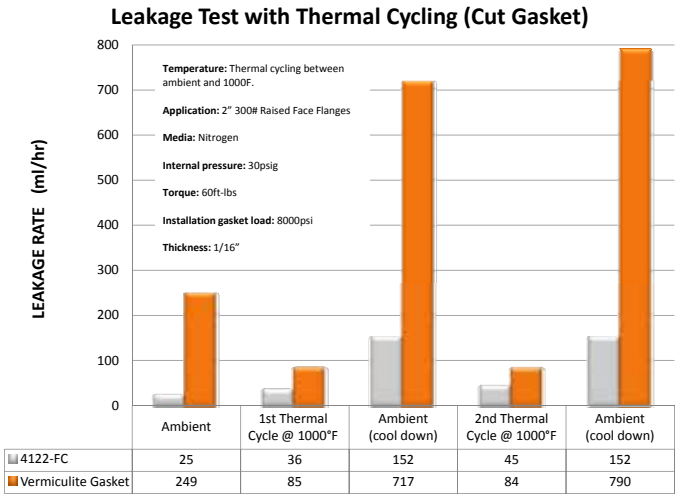
2. PxT = psig x ºF (bar x ºC)

* 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 1/16" (1.6mm) gasket thickness unless otherwise mentioned.

OUT PERFORMS

THERMa-PUR® out performed vermiculite based gaskets in laboratory testing†. THERMa-PUR® showed significantly less leakage even in extreme thermal cycling condition.

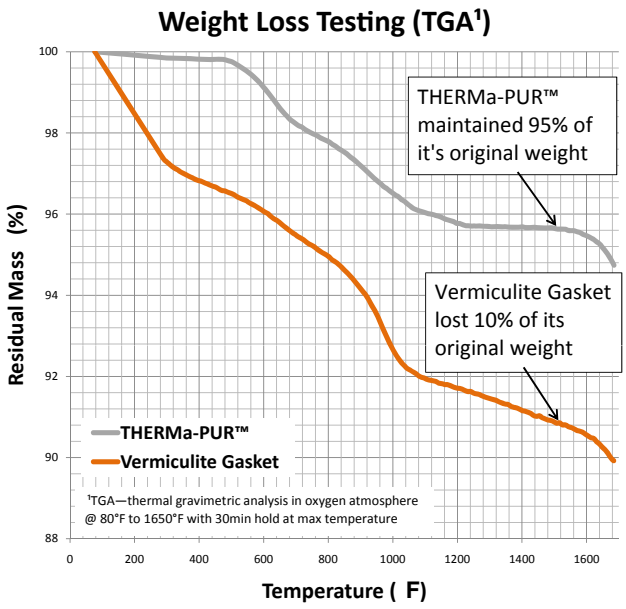
†For test details, please contact Garlock Engineering

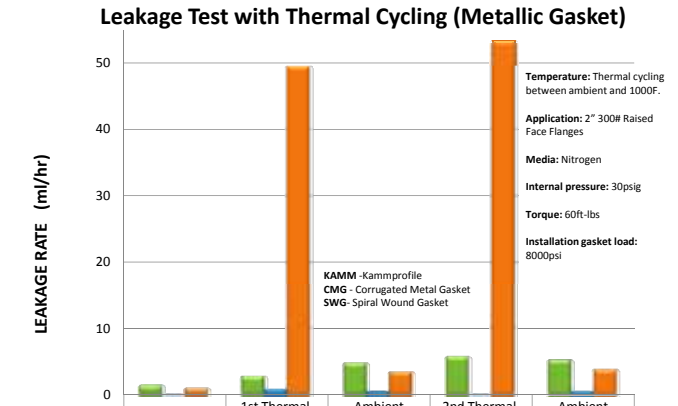


	Ambient	1st Thermal Cycle @ 1000°F	Ambient (cool down)	2nd Thermal Cycle @ 1000°F	Ambient (cool down)
4122-FC	25	36	152	45	152
Vermiculite Gasket	249	85	717	84	790

LOW WEIGHT LOSS

THERMa-PUR® proprietary formulation resists oxidation and has improved weight loss property by almost 2X when compared to other high temp organic based gaskets such as graphite and vermiculite.

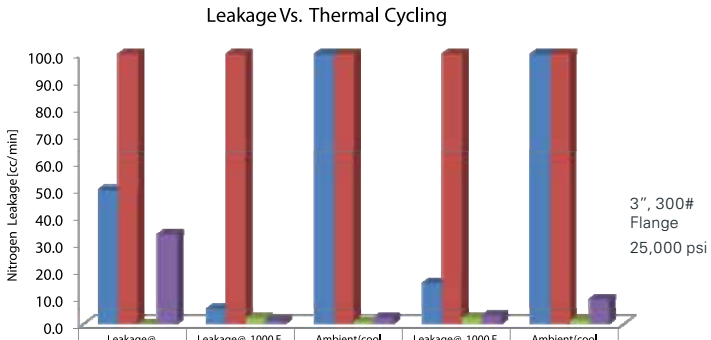




	Ambient	1st Thermal Cylce @ 1000°F	Ambient (cool down)	2nd Thermal Cycle @ 1000°F	Ambient (cool down)
4122-KAMM	1.4	2.8	4.8	5.7	5.2
4122-CMG	0.10	0.80	0.53	0.10	0.53
Vermiculite SWG	1.0	49.5	3.4	53.3	3.8

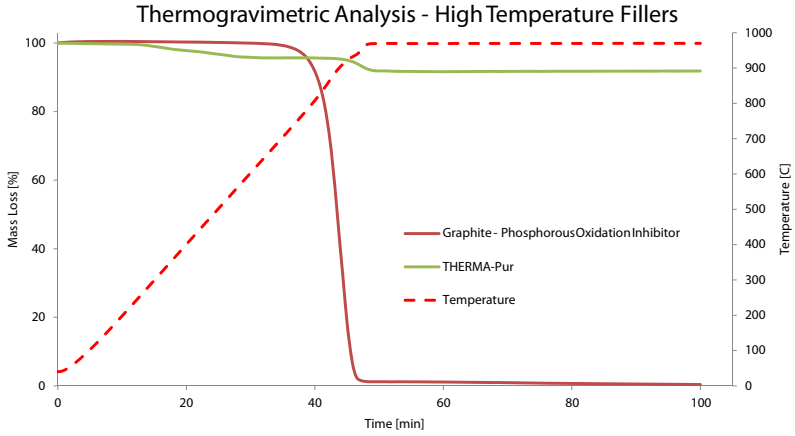
THERMA-PUR® SPIRAL WOUND TESTING

Functional performance of the THERMa-PUR® spiral wound demonstrates its superior high temperature sealing capability.

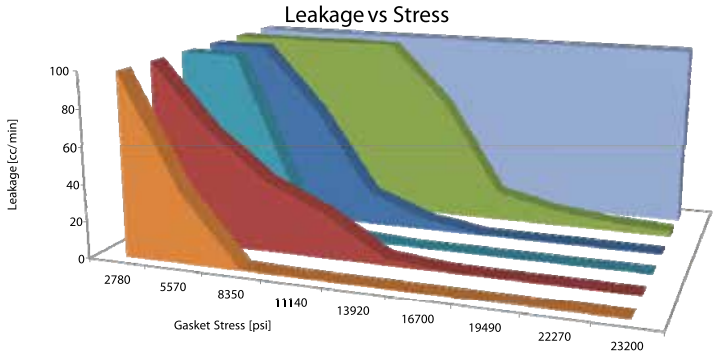


	Leakage@ Ambient	Leakage@ 1000 F	Ambient(cool down)	Leakage@ 1000 F	Ambient(cool down)
Mica	50.0	5.8	100.0	15.3	100.0
Ceramic	100.0	100.0	100.0	100.0	100.0
Therma-Pur Faced	0.004	2.2	0.9	2.3	1.3
Heat Shield	33.4	1.263	2.312	3.046	9.41

Laboratory testing demonstrates the long term, high temperature stability of the THERMa-PUR® material compared to existing materials.



Effective sealing is achieved at gasket stresses at or below comparable products.



	2780	5570	8350	11140	13920	16700	19490	22270	23200
Standard Graphite	100.000	39.050	0.896	0.206	0.106	0.033	0.024	0.015	0.008
Faced Therma-Pur SW	100.000	64.100	38.830	24.350	3.866	0.707	0.313	0.281	0.091
Heatshield	100.000	100.000	26.150	2.250	0.101	0.047	0.027	0.024	0.018
Therma-Pur SW	100.000	100.000	65.240	18.250	5.880	0.328	0.310	0.294	0.105
Mica	100.000	100.000	100.000	100.000	67.450	16.200	8.650	4.900	3.000
Ceramic	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000	100.000

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