

Grafoil® Flexible Graphite

No. 5239B1-USA

Parker Grafoil® flexible graphite provides reliable, cost-effective sealing of virtually any fluid in extreme temperatures and pressures.

General properties

Grafoil® (compressed graphite) is a pure, binderless, lubricous material. As such, it possesses thermal and fluid resistance far beyond the scope of elastomers, plastics, asbestos and other ordinary materials. Grafoil® flexible graphite is ideal for static and dynamic sealing applications.

Applications

Typical applications are in environments where operating temperatures exceed 400°F. Parker Grafoil® can be fabricated in a variety of sizes and shapes and is most often used as valve stem packings or as mechanically activated static seals. Other applications include pumps, pipelines, gaskets, stems, motors.

Potential Customers

- Valve manufacturers
- Pump manufacturers
- Power generation plants including nuclear and petrochemical facilities
- Any OEM that requires high-temperature seals.

Engineering & manufacturing expertise

The key to a successful product is first completely understanding the design engineer's requirements. Parker's application engineers are available to assist in optimizing an existing design or propose design alternatives. We offer full design and engineering capabilities, including prototype development, tool design, and lean production manufacturing. Control in uniform density, in dimensional tolerance, and in visual quality are consistent in our manufacturing processes resulting in delivering our customers the very best in engineered flexible graphite die formed and laminated sealing devices.

Contact us

Contact Parker for your flexible graphite seal needs at ph: (713) 675-1003 or fax: (713) 675-5829.



Product Availability

Engineered flexible graphite is available in die-formed and laminate configurations. Configurations range from die-formed ID/OD rings to inserted seals for use in high pressure/thermal situation. Mesh inserts available for increase stability. All can be produced in any specified density. Grafoil® is also available in tape widths of 1/4" through 39" in 0.050 to 0.025 mil thickness in a variety of lengths with plain, crinkle and adhesive-backing available on request.

Description of Grades

GT™ A	Premium grade 99.5% graphite minimum. 50 PPM leachable chloride maximum. Will meet D50YP12. No binders or resins.
GT™ J	Premium Grade GT™ A based sheet, with a non-metallic, inorganic, passivating inhibitor for corrosion and oxidation resistance. Will meet D50YP12. No binders or resins.
GT™ B	Standard industrial grade. 95.0% graphite minimum. 100 PPM leachable chloride maximum. No binders or resins.
GT™ K	Grade GT™ B based sheet with a non-metallic, inorganic, passivating inhibitor for corrosion and oxidation resistance. No binders or resins.

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Build With The Best!

Parker Seals
www.parkerseals.com

Features

- ◆ High percentage of pure graphite
- ◆ Precision made for interference seal fit
- ◆ Wide temperature range
- ◆ Metal reinforcement
- ◆ Broad sizes (up to 40" dia)

Benefits

- ◆ Chemical inertness and self lubrication
- ◆ Requires little or no gland adjustment
- ◆ -400°F to 1600°F*
- ◆ Higher strength within the same gland
- ◆ Existing sizes mean minimal tool cost

*Consult Parker Applications Engineers for application review

Thermal Stability

Flexible graphite maintains thermal stability from -400°F to its sublimation point of 6600°F (-151°C to 3648°C) in neutral or reducing atmospheres (-400°F to 850°F in oxidizing atmospheres). Dependable performance is assured within these ranges with no effect to the material with respect to embrittlement or degradation.

Thermal Conductivity

Thermal conductivity is expressed in watts/meter deg. C (W/M/°C). Flexible graphite is rated for approximately 150 W/M/°C. For this reason, flexible graphite reveals itself as the ultimate for consideration in sealing systems requiring rapid heat dissipation and heat exchange.

Density

Die-formed flexible graphite is offered in the following densities:

- 70 lb./ft. (as manufactured)
- 90 lb./ft. (standard)
- 100 lb./ft.
- 110 lb./ft. (ultimate density)

Tolerances

Parker offers precision tolerances on die-formed flexible graphite of ± 0.005 on ID and OD widths at 90 lb.ft. density.

Chemical Compatibility

Grafoil® flexible graphite is compatible in virtually all inorganic and organic media, and in some instances is the "only" material capable of acceptable sealability. Unlike hygroscopic asbestos, flexible graphite resist moisture, permitting outstanding resistance.

Grafoil® is a registered trademark of UCAR Carbon Company, Cleveland, OH.

Friction and Lubrication

As flexible graphite is totally lubricous in its natural state, with a coefficient of friction of 0.05 (8 psi loading on stainless steel), pre-lubrication is unnecessary except under certain conditions in dynamic sealing applications. Compatible lubricants for this purpose are as follows:

1. Natural — animal, vegetable, fish base
 - Castor oil
2. Natural — petroleum base
 - Mineral oil
 - Napthenic crude
 - Lithium based grease
 - SAE high performance oils
3. Synthetics
 - Polyglycols (glycerine, ethylene glycol)
 - Phosphate esters (including di-esters)
 - Silicone — oils and greases, but not spray types
 - Fluorocarbons — flurotubes, PTFE, etc.
 - Polyphenyl ethers
 - Bisphenyl — Bisphenyl Oxide (Dowtherm)
 - Selected amines (methyl ethyl ethanolamine)
4. Solids
 - Molybdenum disuplhide
 - PTFE dispersants
 - Lead napthenate
 - Silver (colloidal)



Compressed Grafoil® rings

