Valve solutions for a constantly changing world.



EGC

ENGINEERED SOLUTIONS

A Michelin Group Company

For a valve rebuilder, it just doesn't get any better than this.

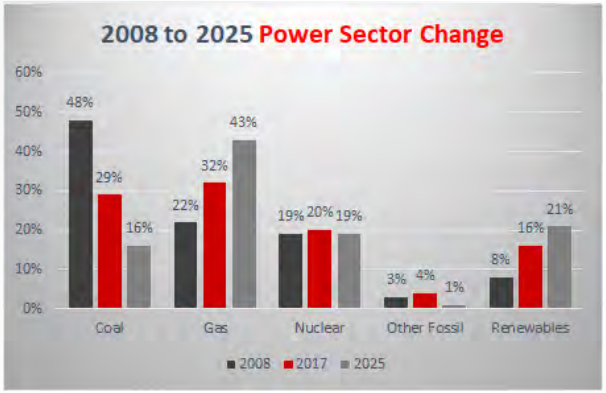
EGC Enterprises knows more about flexible graphite than most other companies in the world because we engineer and manufacture high-tech, high-temperature, high pressure fluid sealing products. Founded in 1978, EGC has a long history of innovation and customer-based solutions. EGC engineers are recognized worldwide as problem solvers where high-quality is our measure of excellence.

It's about saving time.

Valve maintenance professionals live in a world that's constantly changing. A decade ago, it could take weeks or months to finish an outage. Now, it's two weeks or less. There are cases when the plant adds a last-minute valve to the outage scope or an emergency shutdown occurs where there is only a day or two to complete the job.

EGC began making graphite pressure seals for the US Navy about 25 years ago. In fact, EGC seals are still the only graphite pressure seals approved for use in Standard Navy Valve designs aboard nuclear propulsion vessels. But, because of tooling, pressure seals initially required six weeks or more to make a timeline that worked for the US Navy, but wasn't nearly good enough for application in the valve repair aftermarket, where time is of the essence.

But EGC engineers are as persistent as they are inventive.They found ways to reduce the engineering and production time on their seals. And in doing so, they changed the entire valve maintenance landscape to





The VSG: A faster solution.

In 2008, EGC engineers made a remarkable breakthrough. They engineered a proprietary process to eliminate die-formed tooling from the manufacturing of graphite pressure seals. It was the first **VSG** pressure seal with caps. For the first time, the graphite pressure seal could be made without tooling, while still delivering the same performance as the US Navy graphite seal and sealing 100% of the time. Standard delivery dropped from six weeks to ten days, with the potential to drop to less than a week. Now, there was a flexible graphite pressure seal ideal for the outage schedules of the power industry.

Standard Leadtime	**2-4 weeks**
Expedited Delivery	**Inquire about Fast-Track options**
Material	**High density graphite with oxidation inhibitor with 300 series Stainless Steel caps**
Applications	**Pressure seal bonnet valves in Natural Gas, Coal, Steam Generation Solar and Nuclear PowerPlants. Petrochemical and Chemical refineries**
Available Sizes	**3" to 27" in diameter**
Pressure Limit	**Up to 4,500 lbs. class valves**
Temperature Limit	**1,200 F Steam, 875 F oxidizing environment**
Chemical Resistance	**pH 0 – 14 except in strong oxidizers**



The VSG Pro: Same performance, same-day service.

With the natural gas boom, outage scopes were often reduced to less than seven days. This led EGC engineers to pioneer another breakthrough in 2010: a high-density, high-temperature graphite pressure seal with no tooling AND no caps. It was called the **VSG Pro** Pressure Seal. It focused on a revolutionary anti-extrusion design. With no production tooling or caps, standard delivery fell to 48 hours, or even same day. Now outage managers and rebuilders could get a custom engineered, flexible graphite seal that could be completed the same day the order arrived, then shipped immediately. The result: the fastest graphite seals on the planet. That's why today, 95% of all EGC pressure seals are **VSG Pro**s.

Standard Leadtime	**48 hours**
Expedited Delivery	**Inquire about Fast-Track options**
Material	**High density graphite with oxidation inhibitor with 300 series Stainless Steel Edges**
Applications	**Pressure seal bonnet valves in Natural Gas, Coal, Steam Generation Solar and Nuclear Power Plants. Petrochemical and Chemical refineries**
Available Sizes	**3" to 40" in diameter**
Pressure Limit	**Up to 4,500 lbs. class valves**
Temperature Limit	**1,200 F Steam, 875 F oxidizing environment**
Chemical Resistance	**pH 0 – 14 except in strong oxidizers**



VSG ProPack:
A better stem packing idea

EGC Engineers have applied the same proprietary manufacturing technology to packing sets, eliminating die-formed tools from the manufacturing process. This development enables every valve to have custom engineered packing sets that are specifically designed for a perfect fit in 48 hours or less. The **VSG ProPack** is a valve stem packing set composed of two, Inconel reinforced end rings and 1 to 5 pure graphite center rings.

Standard Leadtime	**48 hours**
Expedited Delivery	**Inquire about Fast-Track options**
Material	**Inconel reinforced braided graphite end rings– flexible graphite with oxidation inhibitor center rings**
Applications	**Valves in Natural Gas, Coal, Steam Generation Solar, Nuclear, Petrochemical and Chemical refineries**
Available Sizes	**1/2" to 10" in diameter**
Pressure Limit	**10,000 psi**
Temperature Limit	**1,200 F Steam, 875 F oxidizing environment**
Chemical Resistance	**pH 0 – 14 except in strong oxidizers**



VSG ProPack Rings:
Custom-Fit Graphite Rings. Delivered Fast.

VSG ProPack Rings are precision-engineered pure graphite center rings produced using the same proprietary technology as VSG ProPack packing sets. By eliminating die-formed tooling, custom-fit rings can be manufactured in as little as 48 hours. Designed for valve stem applications that do not require end rings, they can be used alone or combined with braided packing materials to provide reliable sealing and fast turnaround for maintenance needs.

Standard Leadtime	**48 hours**
Expedited Delivery	**Inquire about Fast-Track options**
Material	**Flexible graphite with oxidation inhibitor**
Applications	**Valves in Natural Gas, Coal, Steam Generation Solar, Nuclear, Petrochemical and Chemical refineries**
Available Sizes	**1/2" to 10" in diameter**
Pressure Limit	**4,000 psi (10,000 psi with Inconel reinforced end rings)**
Temperature Limit	**1,200 F Steam, 875 F oxidizing environment**
Chemical Resistance	**pH 0 – 14 except in strong oxidizers**



3300IV FE - The ultimate in engineering that virtually eliminates fugitive emissions.

LDAR programs have shown that valve stems are a major source of VOC leaks. Product loss is just a small part of the potential cost. EPA fines, environmental risks, health hazards, legal liability and plant shutdowns can make the total costs of vapor leaks significant. **3300IV FE** packing can help prevent fugitive emissions from escaping through the stem of the valve. It has passed API 622 and does NOT degrade up to 850F. With proven performance in Annex C high temperature testing. It averages just 1ppmv, without the adjustment of the gland, during testing performed at the Yarmouth.

Material	**Inconel reinforced graphite packing with a proprietary blocking agent engineered for fugitive emissions control and superior sealing performance**
Applications	**Rising and rotating stem valves in Petrochemical and Chemical refineries**
Available Sizes	**1/8" to 1" cross section**
Pressure Limit	**5,000 psi**
Temperature Limit	**850 F**
Chemical Resistance	**pH 0 – 14 except in strong oxidizers**



3300IV - High Performance Inconel reinforced Valve Packing

In high-pressure, high-temperature applications, reliable sealing is critical. **3300IV's** construction withstands extreme pressures, while a built-in corrosion inhibitor prevents pitting and extends service life. The packing performs effectively across steam, chemical, and other demanding systems and installs quickly with no special tools required. Advanced blocking agents improve sealing performance by up to four times and reduce friction by 50% compared to equivalent packings, supporting longer valve life and reduced maintenance.

Material	**Inconel reinforced graphite packing with a proprietary blocking agent engineered for high-pressure and high-temperature reliability**
Applications	**Rising and rotating valves used in power, refining, and chemical plants.**
Available Sizes	**1/8" to 1" cross section**
Pressure Limit	**8,400 psi**
Temperature Limit	**1,200 F Steam, 875 F oxidizing environment**
Chemical Resistance	**pH 0 – 14 except in strong oxidizers**



3300IVD - PTFE Free Inconel reinforced Valve Packing

In high-temperature applications where chemical purity and stability are critical, additive-free sealing performance is essential. **3300IVD** packing is designed for high-pressure service and contains no added lubricants or blocking agents, making it ideal for environments where contamination or out-gassing must be avoided. Its durable construction provides reliable sealing across steam, chemical, and elevated-temperature systems while maintaining dimensional stability over time. The flexible design allows for fast, easy installation with no special tools required, helping reduce downtime and simplify maintenance.

Material	**Inconel reinforced graphite packing without lubricatns or blocking agents**
Applications	**Rising and rotating valves used in power, refining, and chemical plants.**
Available Sizes	**1/8" to 1" cross section**
Pressure Limit	**5,000 psi**
Temperature Limit	**1,200 F Steam, 875 F oxidizing environment**
Chemical Resistance	**pH 0 – 14 except in strong oxidizers**



3300GV - Carbon Corner reinforced Valve Packing

3300GV valve packing is a performance grade flexible graphite braided packing designed for high-temperature valve service where extrusion resistance and chemical purity are critical. Each strand is reinforced with high-purity carbon fibers and incorporates fixed anti-extrusion carbon corners, providing added stability in applications where wire reinforcement cannot be used. With no added lubricants or blocking agents, **3300GV** offers non-contaminating, compositionally stable sealing performance ideal for demanding environments.

Material	**Carbon Fiber reinforced graphite packing with built in anti-extrusion corners**
Applications	**Rising and rotating valves used in power, refining, and chemical plants.**
Available Sizes	**1/8" to 1" cross section**
Pressure Limit	**4,000 psi**
Temperature Limit	**1,200 F Steam, 875 F oxidizing environment**
Chemical Resistance	**pH 0 – 14 except in strong oxidizers**



3300CV - Optimized Carbon reinforced Valve Packing

3300CV valve packing is a performance grade flexible graphite braided packing reinforced with high-purity carbon fibers in every strand. Designed as a superior general-service packing, it contains no added lubricants or blocking agents, providing clean, chemically inert sealing performance. **3300CV** is well suited for rising and rotating valves in power generation, pulp and paper, refinery, petrochemical, and chemical processing applications, and serves as an ideal center ring material for field sets when used in conjunction with 3300IVD.

Material	**Carbon Fiber reinforced graphite packing**
Applications	**Rising and rotating valves used in power, refining, and chemical plants.**
Available Sizes	**1/8" to 1" cross section**
Pressure Limit	**4,000 psi**
Temperature Limit	**1,200 F Steam, 875 F oxidizing environment**
Chemical Resistance	**pH 0 – 14 except in strong oxidizers**



3300T - 100% Pure braided PTFE Valve Packing

3300T valve packing is a 100% pure PTFE filament braided packing designed for low-temperature valve service requiring exceptional chemical resistance. Thoroughly impregnated with a PTFE suspensoidal blocking agent, it delivers an extremely low coefficient of friction without the use of sacrificial lubricants. **3300T** is well suited for rising and rotating valves in pipeline and process applications across power, pulp and paper, refinery, petrochemical, and chemical plants where clean, reliable sealing is essential.



Material	**100% Pure PTFE filament braided packing with a PTFE suspensoidal blocking agent**
Applications	**Rising and rotating valves used in pipeline, power, pulp and Paper, refining, and chemical plants.**
Available Sizes	**1/8" to 1" cross section**
Pressure Limit	**2,000 psi**
Temperature Limit	**500 F**
Chemical Resistance	**pH 0 – 14 except in strong oxidizers**



3300M - Ultra-High-Temperature braided Valve Packing

3300M ultra-high-temperature braided valve packing is engineered for applications that exceed the operating limits of flexible graphite. Constructed from mica yarns jacketed with Inconel wire, it provides excellent extrusion resistance and mechanical stability at extreme temperatures. The packing is ideally suited for molten salt service, engine and high-temperature exhaust systems, and can also be used as an oxidation barrier within graphite packing sets. It is compatible with a wide range of solvents, acids, bases, and mineral oils, and performs reliably in nuclear, power, refinery, petrochemical, and chemical processing applications.

Material	**Inconel reinforced mica based packing**
Applications	**Rising and rotating valves used in power, pulp and paper, refining, and chemical plants**
Available Sizes	**1/8" to 1" cross section**
Pressure Limit	**Application dependent - Consult engineering**
Temperature Limit	**1,832 F**
Chemical Resistance	**pH 0 – 14 except in strong oxidizers**





When consistent load is critical consider EGC live-loaded packing sets.

When thermal cycling, pressure surges, packing relaxation or wear cause gland force to diminish, EGC has a solution. It's called **live-loaded packing** and it's done with Belleville spring washers. The washers are inserted on the stem or on the fasteners. They press against the check-nuts and the flange to maintain constant pressure on the gland packing. Belleville spring washers have a high spring rate, can resolve thermal expansion and produce extremely high loads in a small area. They can absorb shock, provide dampening and support extreme forces in bolted areas.

Material	**Inconel reinforced braided end rings – flexible graphite with oxidation inhibitor center rings – Belleville spring materials vary by application**
Applications	**Rising and rotating stem valves in Natural Gas, Coal, Steam Generation Solar and Nuclear Power Plants, Petrochemical and Chemical refineries**
Available Sizes	**1/2" to 10" in diameter**
Pressure Limit	**10,000 psi**
Temperature Limit	**1,200 F Steam, 875 F oxidizing environment**
Chemical Resistance	**pH 0 - 14 except in strong oxidizers**



Thermafoil Gaskets:
Tell Us the Application. We'll Build the Gasket.

Our **Thermafoil Gaskets** are available in a wide range of graphite constructions, including plain graphite, metal-reinforced graphite, and graphite laminated to various substrates to meet specific application requirements. Sheets can be supplied in standard sizes or custom configurations, with gaskets precision-cut to customer specifications. Simply provide the graphite type or application requirements, and we engineer, manufacture, and cut gaskets to fit exact service needs across temperature, pressure, and chemical environments

Material	**Typical base material - flexible graphite with oxidation inhibitor**
Applications	**Flange and valve applications in Natural Gas, Coal, Steam Generation Solar and Nuclear Power Plants, Petrochemical and Chemical refineries**
Available Sizes	**Up to 59" in diameter**
Pressure Limit	**Application dependent - Consult engineering**
Temperature Limit	**1,200 F Steam, 875 F oxidizing environment**
Chemical Resistance	**pH 0 – 14 except in strong oxidizers**



Alta-P.
Tough under pressure!

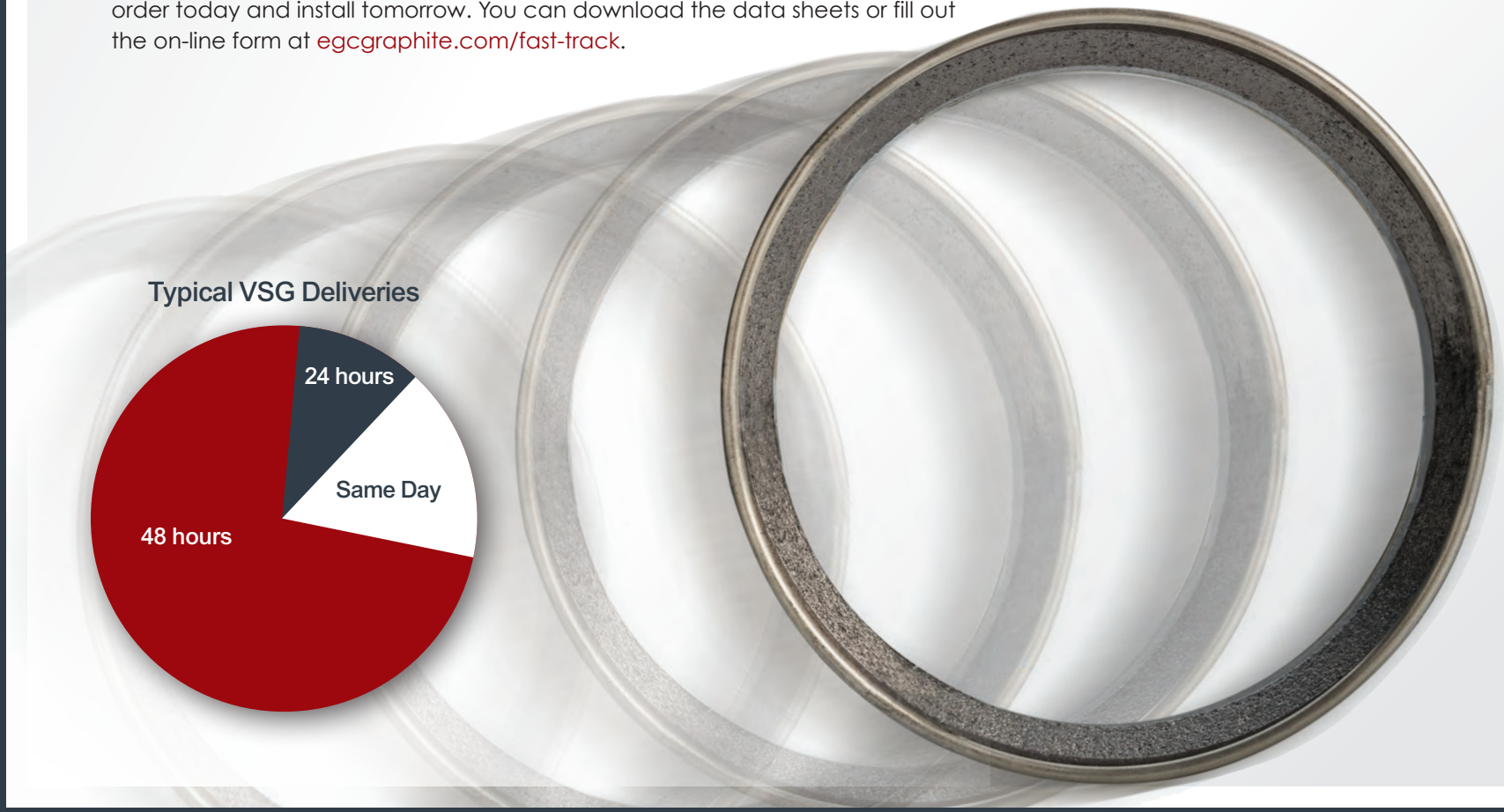
Thermafoil Laminated **Alta-P (TF-LAP)**, consists of two parts – graphite and stainless steel with no adhesive binders. Layers of stainless provide extra strength, giving the composite material the ultimate in toughness in very high-pressure situations. **Alta-P** can handle gasket pressures of up to 40,000 psi unit load and system pressures of up to 3,500 psi in non-contained applications. **Alta-P** also handles system pressures of up to 14,000 psi if the cavity is contained on the OD and ID.

Material	**High density graphite with oxidation inhibitor and 316 series Stainless layers**
Applications	**Flange and valve applications in Natural Gas, Coal, Steam Generation Solar and Nuclear Power Plants, Petrochemical and Chemical refineries**
Available Sizes	**1/16", 1/8", and 3/16" thick and up to 24" in diameter**
Pressure Limit	**3,500 psi in non-contained flanges and 14,000 psi when OD and ID are contained**
Temperature Limit	**1,200 F Steam, 875 F oxidizing environment**
Chemical Resistance	**pH 0 – 14 except in strong oxidizers**



Fast-Track™ Another reason EGC is the fastest on the planet!

Fast-Track is EGC's expedite program. Valve repair personnel can use Fast-Track to maintain an outage schedule or for emergency shut-downs. Fast-Track can ship the same day, which should not be surprising given EGC's track record for driving down delivery times. Just fill out the VSG, VSG ProPack or Live Loaded data sheet, specify where and when you need it and we'll handle the rest. Our high-performance team of associates are eager to make your delivery the fastest possible. Just order today and install tomorrow. You can download the data sheets or fill out the on-line form at egcgraphite.com/fast-track.



Let EGC engineer your next seal.

EGC's flagship products set the standard for valve sealing.
Every seal is custom engineered and manufactured to your exact need.

Unlike metal pressure seals EGC's VSG graphite pressure seals can handle multiple thermal cycles a day, seals every time and rebounds after every pressure cycle. They are compressible and conformable and works in over-size, out-of-round, steam-cut and pitted bonnet valves. They are removed as easily as they are installed. Maintenance studies show that you can save 75% on valve repair labor time by using graphite pressure seals vs metal.

EGC has continually raised the bar with an impressive range of engineered solutions like VSG Pro and Pro Pack, 3300 Valve Packing, Live-Loaded Packing, Alta-P and Fast-Track.

For a valve rebuilder, it just doesn't get any better than this.
Let EGC be your fluid sealing solutions provider.

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