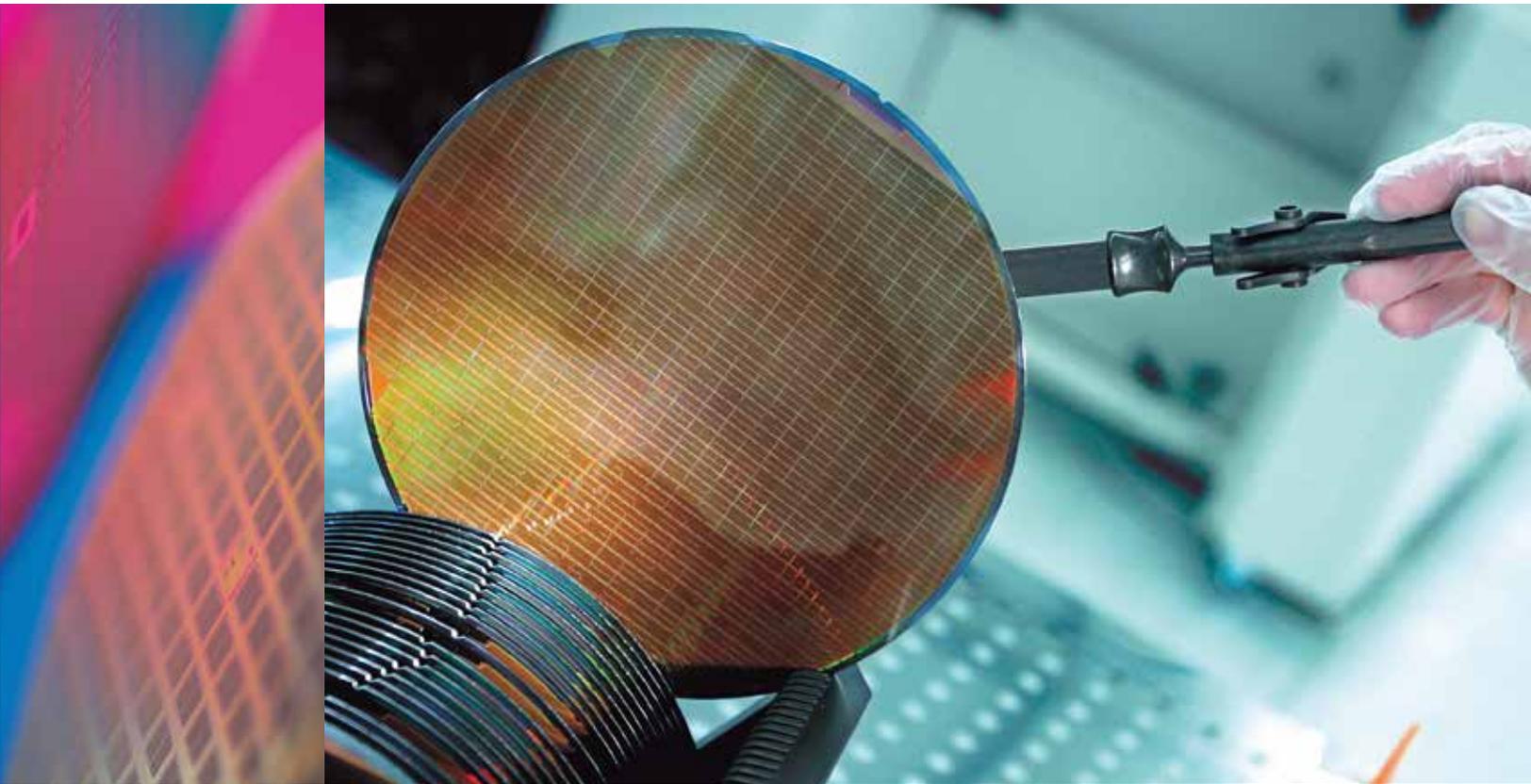


Customized High Purity Thermoplastic Components and Perfluoroelastomer Seals for Semiconductor Manufacturing

Materials. Engineering. Precision.



EGC designs and manufactures thermoplastic components and custom perfluoroelastomer seals to precisely address your challenges with high purity front-end equipment challenges. Our engineering team and manufacturing facility, with a clean room molding cell, have the experience and capabilities needed for your complete design cycle; from initial prototyping through mass production. Your project benefits from hands-on support by an experienced engineering staff, world-class materials and manufacturing, and focused adherence to your schedule and needs.

We get the job done.

Semiconductor industry leaders depend on EGC components for processing and etching equipment in wet processing, chemical delivery, analytical, automated material handling, and specialty packaging systems. We are collaborative partners in enhancing operational and economic performance for a wide range of products, including:

- **Precision components**—Filtration components, fittings, sight glasses, probes, and high precision machined components
- **Seals**—Spring energized seals with metallic or non-metallic springs, composite seals, and fluoropolymer seals
- **Wear Products**—Bearings and bushings

We specialize in extremes.

EGC thermoplastic components and custom perfluoroelastomer seals are engineered for the challenges of semiconductor applications, including such as:

- Harsh chemical environments
- Extreme pressure ranges
- Temperature from cryogenic to 228°C (550°F)

We design for value.

EGC products and solutions help clients achieve long-term value through lower manufacturing, inventory, and operating costs by:

- Prototypes and production utilizing exact materials and process for ease of validation
- Creative tooling options
- Solid understanding of polymers for semiconductor manufacturing environment
- Wide supplier base and process expertise for technically challenging polymers
- Wide process capabilities for customization and kitting components

We customize performance.

The toughest challenges rarely have off-the-shelf solutions. Performance and market differentiators come from custom products built for the task—and ours are built for yours. Depending on your project's needs, we can provide engineering service support in the design process or give shape to your design utilizing our advanced manufacturing capabilities.



Solutions
just



They
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We build solutions one at a time.

Your project benefits from decades of EGC experience in understanding client objectives and quickly producing the optimal solution. As a result, the advantages of EGC high purity thermoplastic components and perfluoroelastomer seals take many forms:

Case Study #1

Controlling contaminants is at the core of the wafer cleaning process to address the challenge of maintaining a seal with 15% change in hardware cross section during operation without any leachables or extractables, EGC teamed with the engineers of a leading semiconductor equipment manufacturer to develop a specially designed Optiseal® to compensate for the lift off. The high purity, high pressure face seal prevented extrusion under high pressure and passed the customer's cycle testing with no leachables detected.

Case Study #2

A semiconductor OEM needed a high precision seal with broad chemical resistance for use in an aggressive wafer-etching solution. The seal had to conform to tight tolerances in order to effectively handle the delicate wafers through the etching process. Previous seals had failed both in the field and during initial testing, causing expensive wafer scrap and rework.

EGC Critical Components recommended a high purity fluoroelastomer seal overmolded to a Virgin PEEK retainer. The physical properties of the PEEK and FFKM proved to withstand the harsh chemicals used during the etching process. The overmolded design, in conjunction with the integration of metal inserts, allowed for EGC's solution to uphold the tight tolerance requirements and maintain sealing integrity across the entire surface of the delicate wafer.

EGC's innovative sealing solution allowed for the semiconductor OEM to reduce wafer scrap and rework by 60%, saving over \$500,000 annually. Furthermore, the integrated design allowed for a more robust sealing method, thus extending the life of the seals and increasing wafer-etching productivity.

Case Study #3

A customer was at a loss for plastic materials compatible with in-line chemical analysis equipment. Identifying a plastic material to enable exact analysis, without particle shedding or leaching polymer additive contaminants, in a miniature high pressure syringe pump application seemed insurmountable.

EGC's knowledge and expertise with engineering plastics in chemically reactive environments allowed a quick and customized solution utilizing a specialized design for the plunger seal employing a PEEK spring with a proprietary coating inserted into an UHMWPE jacket. This seal was custom fitted on to a PEEK plunger inside an ECTFE barrel.

The customer was able to launch their analysis platform commercially without concern for the syringe pump as a source for any molecular contamination allowing confidence of a true analysis on a parts per billion (ppb) scale. As a result, the customer was able to accurately detect and identify organic molecular contamination at the source, enabling higher yields immediately. This customer developed the first successful in-line metrology equipment demonstrating accuracy at this molecular level.



To learn how EGC Critical Components can improve performance in your operations, please visit our website at EGCcomponents.com

Or talk with our experts at 281.774.6100

8103 Rankin Road
Humble, TX 77396

In-depth Solutions

EGC Critical Components is a designer and manufacturer of custom thermoplastic and elastomeric products. As a part of the global group Fenner, we partner with clients to produce unique solutions in many industries, including industrial, medical, and scientific applications.

DISCLAIMER: The descriptions, design and performance information, and recommended uses for the products described herein are based on our design and manufacturing experience, product testing in specific conditions, and industry standards. As such, this information is for general guidance only. Our products are accompanied with their own warranty which is given in writing at the time of sale.

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