



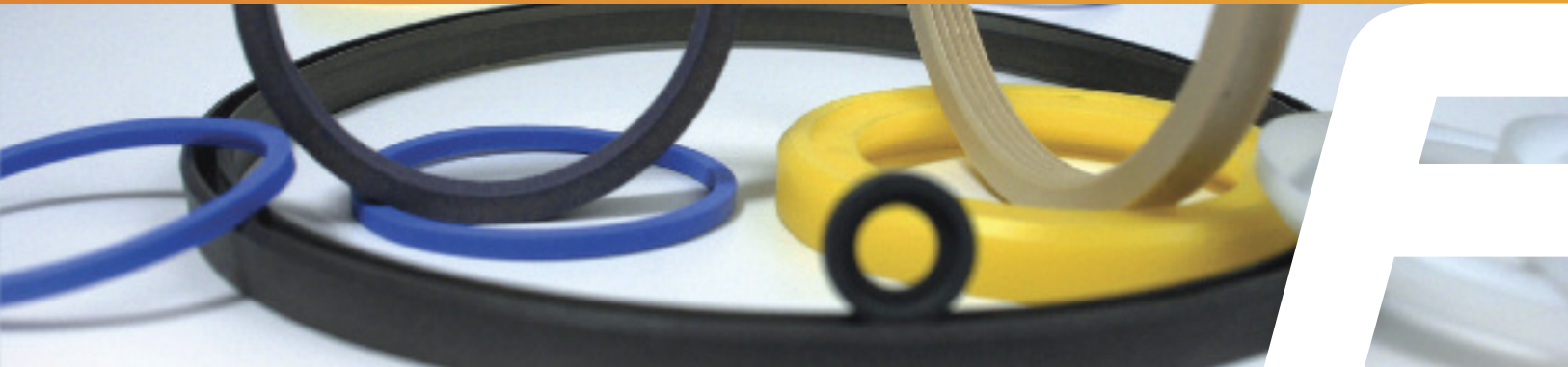
**FLUOROCARBON**

**High Performance  
Sealing Systems**



World leading innovations in  
fluoropolymer processing

# Custom solutions for almost any sealing application



## High Performance Sealing Systems

## Our Full Range Of Seals

**At Fluorocarbon we are dedicated to the design and manufacture of high performance seals, including energised PTFE seals, Fluoroglide® PTFE bearings, metal sealing rings and PTFE lipped rotary shaft seals. Seals are available with metallic spring or rubber energisers in a wide range of forms and materials to meet almost any sealing application.**

**We offer custom solutions for use throughout many industries, including chemical, pharmaceutical, food processing, aerospace, automotive and offshore, as well as custom designs for special applications.**

Designed for use in the most demanding conditions our seals offer the following benefits:

- Excellent chemical resistance
- Wide operating temperature range
- Very low coefficient of friction
- No stick/slip effect
- High resistance to wear
- Good dry running properties

Whether a standard seal or a custom design requirement our dedicated technical team can provide you with innovative and effective solutions to your needs.

### Bespoke Designed Seals

Using our team of engineers we design, develop and specify a range of sealing and bearing components to meet the demands of a variety of applications.

### Elastomeric Energised Seals

Our range of elastomeric energised seals incorporate O rings or square section rings in a selection of materials.

### Metallic Sealing Rings

Metal O and C rings are used as a deformable seal in a static sealing situation.

### Rotary Shaft Seals

PTFE rotary seals are designed to seal liquid and gaseous media in rotating hardware.

### Spring Energised Seals

Our range of spring energised seals incorporates a metallic energiser of either a V or coil section.

### Fluoroglide® Bearings

Fluoroglide® PTFE bearing strips are used to guide pistons and piston rods in hydraulic and pneumatic cylinders to prevent metal-to-metal contact.

### Polyurethane Seals

A range of polyurethane seals have been developed for both hydraulic and pneumatic use, all to fit within the ISO standard groove dimensions.



The Hertford site conforms to Green Dragon Level 2 Standard

The range of high performance seals and bearings are designed to suit customers' specific needs.



## High Performance Polymers

Utilising our unique Fluorinoid® materials range, seals can be provided in a variety of PTFE and polymeric materials, metals, polyurethanes and elastomers designed to meet the most demanding conditions of temperature, pressure, speed or price.

### Virgin PTFE

**PTFE is a fluoropolymer with exceptional properties such as low friction, media resistance and a wide usable temperature range.**

Low resistance to wear and creep in its virgin state can be vastly improved by the addition of fillers such as glass, carbon, bronze and molybdenum disulphide which can further improve the overall mechanical and physical properties. This makes it ideally suited to sealing applications where these many characteristics are desirable.

### Glass fibre filled PTFE

Available in a range of compositions, glass fibre significantly improves the wear resistance of PTFE and other polymers. This makes it recommended for use in high PV applications. The downside is that the fibres can be abrasive so the mating surfaces need to be hardened to resist abrasion. Glass fibres also improve the compressive strength which reduces creep in high pressure applications.

### Carbon filled PTFE

Carbon is available as both powder and fibre filler. Carbon improves both the wear resistance and compressive strength of PTFE. Carbon powder is less abrasive than the fibre based fillers and is suited to bearing applications when used in larger percentages.

### Bronze filled PTFE

Bronze is usually used in combination with molybdenum disulphide in seals and bearings. The bronze greatly improves the hardness, compressive strength and wear resistance and is commonly used in hydraulic applications. The molybdenum disulphide improves lubricity and reduces break-out friction in dynamic applications.

### Polymeric filled PTFE

The addition of aromatic polymers can greatly increase the wear resistance without need for abrasive fillers. Furthermore, the polymers improve the high temperature resistance of the base PTFE.

### PCTFE

Polychlorotrifluoroethylene is an advanced fluoropolymer that exhibits extremely low outgassing and permeability. It also has excellent dimensional stability through the wide range of low temperatures. These properties make it useful in vacuum and cryogenic applications. Limited in high temperature (204°C, 400°F) applications and its high flexural modulus makes it unsuitable in highly dynamic applications.

### UHMWPE

Ultra-high molecular weight polyethylene is a thermoplastic which has good wear and abrasion resistance. It has excellent resistance to imbedding, making it ideal in sealing applications where particulates can cause premature wear of the seal or mating surface. It is limited by a maximum use temperature of 85°C (185°F).

### Typical properties of high performance polymers

#### Temperature range:

Cryogenic to 260°C (Cryogenic to 500°F)

#### Pressure:

Vacuum to 600Bar (8700psi)

#### Velocity:

Up to 15m/s (2900fpm)

Viton® is registered trademark of DuPont

Elgiloy® is the registered trademark of Elgiloy Specialty Metals

Inconel® is the registered trademark of Special Metals Corp

Hastelloy® is the registered trademark of Haynes International Inc



## Metals (Seals or Energisers)

**Metals are required in seals to impart energy in the case of spring energised seals and improve the capability and performance of seals with regard to extremes of temperature and pressure.**

### Stainless Steel

Stainless steel springs are available for many applications in a range of configurations to suit the variety of seal designs, from wire and strip coils to stamped/etched and formed profiles.

Predominantly available as 301 and 302, others include 17-7PH and 316 on request.

Stainless steel is used as the outer shells on rotary seals where the grade is selected based on the housing to ensure interference is maintained through temperature variations. It is also used in O rings and C rings for the metal seals range. In such configurations the metal seals can operate from cryogenic and up to 800°C (1475°F).

### Elgiloy® (UNS-R30003)

Elgiloy® is a cobalt-nickel-chromium-molybdenum alloy with exceptional corrosion resistance, used in spring energisers. Elgiloy® is NACE approved, particularly widespread in seals for the oil and gas industries and available in strip coil and formed profiles to suit the seal configuration.

### Inconel®

Inconel® is a nickel-chromium alloy with excellent chemical and corrosion resistance. Available in various grades such as 600, X-750 and 718, it is available as both an energiser for the polymer seals, casings for the rotary seals and as an O ring and C ring for the metal seals range. Inconel® 600 has a working temperature range from cryogenic to 750°C (1380°F).

Other metals are available on request for either energisers, housing or dedicated seals and include aluminium, copper and Hastelloy®. Metallic and polymer platings/coatings are available for the metal seal range where necessary and include silver, gold and PTFE.

## Elastomers

**Many varieties and grades of polyurethane and elastomers are available as energisers in polymer seals or dedicated seals and components.**

### Polyurethane

Polyurethane is a highly abrasion and tear resistant elastomer available in a range of hardness and colours to suit the application.

Typically specified as 90A - 95A in seals, polyurethane is the material of choice in general hydraulic and pneumatic actuators.

Polyurethane can be cast or moulded as required by the component and is also used in bump stops, diaphragms, wheels and scrapers because of its excellent abrasion resistance.

### Nitrile (NBR)

General use elastomer used for sealing mineral oils, water, air and many other fluids.

Temperature ranges from -40°C to 120°C (-40°F to 250°F). Hydrogenated NBR (HNBR) can be used for higher pressure and temperature applications.

### Fluorocarbon (Viton®)

A high quality compound used for high temperatures from -15°C to 220°C (5°F to 430°F). It is ideally suited to a wide range of synthetic fluids, chemicals and acids.

Available in a range of grades designed to suit the chemical resistance requirements of the application.

### Ethylene Propylene (EP)

EP is an elastomer with excellent resistance to weathering, ozone, water and steam. It is particularly suited to brake fluids and fire resistant to many aviation hydraulic oils. Not resistant to mineral oils, EP also exhibits excellent resistance to compression set. Temperature ranges from -40°C to 150°C (-40°F to 300°F).

### Silicone

Can be used in a wide temperature range from -60°C to 220°C (-75°F to 430°F) and well suited to food and medical applications due to its low toxicity. Also suitable for use in many ester based chemicals.



**For High Performance  
Sealing Systems – contact**

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