Perfluoroelastomers - Combining Resistance with Resilience
Introduction

In chemical industries in particular, the demands on sealing compounds are ever increasing. Developments and technological advances in certain manufacturing processes have resulted in the use of highly aggressive media and extreme working temperatures. These specialist applications often require the use of elastomeric sealing compounds that meet the demands of temperatures in excess of 300°C and possess excellent chemical resistance. How can the reliability and performance of elastomeric sealing solutions in such critical applications be maintained? The answer is - by using perfluoroelastomers.

What are perfluoroelastomers?

A perfluoroelastomer possesses the excellent chemical and thermal resistance of thermoplastic material- PTFE. Resistance is maintained due to the high levels of fluorine atoms contained in the chemical make-up of the perfluoroelastomer – similar percentages as PTFE – but with added chemical atoms to maintain flexibility. The result is a highly fluorinated elastomeric compound, with exceptional temperature resistance, compatibility with a whole range of aggressive chemical combinations and outstanding resistance to permanent deformation.

Extreme Chemicals

When dealing with extremely aggressive chemicals, compounds with excellent resistance are required. The test result of an immersion in polar solvent, MEK as an example, is illustrated in Fig. 1. Fig. 2. and Fig. 3. show the behaviour of different perfluoroelastomers in concentrated inorganic acid and in aromatic solvents.
Overview – The benefits of using perfluoroelastomers

- Reliable sealing performance at extreme temperatures AND in service with aggressive chemicals
- Temperature resistance up to 320°C
- Comprehensive range of grades e.g. low compression set, low out-gassing, Ultra High Purity
- Reduction in production costs – longer servicing intervals and less maintenance required

Typical Applications

Chemical Process- Pumps, valves, static/semi static seals for mechanical seals, filters, flow meters and measurement systems such as liquid chromatography, infra red spectroscopy.

Food Industry- Pumps, mixers, filling machines, SIP systems.

Paints, Lacquers and Solvents- Spray guns, solvent mixer systems.

Semiconductor- Wet process ; including cleaning and rinsing, etching, photolithography. plasma gas deposition and etching, ashing, vapour deposition

Energy Oil and Gas- Down hole logging tools, corrosion monitoring systems, oil additives, fuel additives, corrosion inhibitors.

Printing- Ink jet print heads

Typical Products

- O-Rings
- Cut and moulded shapes
- Metal to elastomer bonding
- Bonded washers
- Sheet material

Why choose Ceetak Ltd?

Working in partnership with Parker Hannifin Seal Group, Ceetak offer their wide range of Parofluor® (perfluoroelastomer trademark) compounds. Working closely with their world-class manufacturing facilities and material development engineers, Ceetak can offer a perfluoroelastomer compound for any application. Our experienced application engineers are on-hand to discuss your seal design and material requirements.
## Selection criteria for available Perfluoroelastomer compounds

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### Applications:

**Chemical Processing**

- Mechanical Seals
- Pumps
- Valves
- Instrumentation
- Flow Control Elements
- Food applications (acc. to FDA CFR21 NO.177.2600)
- Meters
- Mixers
- Reactors
- Conveyors
- Tank Systems
- Inspection glasses

**Semiconductor**

- Plasma Processing
- Gas Processing
- Ion Implantation
- Thermal Processing
- Wet Processing
- UPDI-Water

**Energy**

- Oil Well (sour gas)
- High Pressure gas applications (ED)
- Mud Drilling
- Amine-based fluids
- Hot water/steam systems