



FLUOROCARBON

ENGINEERING & SUBCONTRACTING SERVICES



Introduction

Who we are

Founded in 1962, Fluorocarbon specialises in the manufacture of complex machined components, PTFE seals, slide bearings, skidways systems and high performance coatings. With customers who are worldwide market leaders across many business areas we ensure our products & services are focused on meeting their increasing demands.

The Fluorocarbon Group has 3 manufacturing sites: 2 in the UK and 1 in Europe, sales offices in Europe and partners globally. We aim to offer our customers high quality, cost effective solutions, from material selection to manufacturing and distribution.

With over 60 years of experience in the manufacture of PTFE, melt fluoropolymers and high performance polymers, our range of engineering plastics & stock shapes is one of the most extensive in the world.

Our Fluorinoid® range is available in many variants including in-house blended grades to incorporate fillers such as glass, carbon fibre, graphite and bronze as well as unfilled virgin materials. This, combined with our latest machining and measuring technologies, offers a high quality end-to-end service that is second to none.

Fluorocarbon offer a wide range of modern manufacturing services which can be utilised in the production of high precision machining. We provide machined plastic solutions in the form of prototype, components and assemblies for industries including Oil & Gas, Marine, Defence, Telecommunications and Aerospace and we are AS9100 approved.





Exploiting our specialised processing equipment and wide tooling range, we are able to convert high performance and melt fluoropolymer materials into semi-finished shapes for post machining or low to high volumes of moulded components.

Materials include:

PEEK, PCTFE, PFA, FEP and PPS.

Our range of products includes extruded and hot compression moulded rod, heavy tubing, sheet and custom shapes and can be supplied plain or chemically etched ready for bonding.

Specialising in high quality PTFE compression moulded and extruded rod and tube, we offer a wide range of diameters and lengths suitable for today's modern machining.

PTFE Extrusion

- Rod: 3mm - 140mm diameter up to 4000mm length
- Tube: 15mm – 150mm diameter up to 4000mm length
- PTFE thin wall tubing in a variety of sizes and colours

Compression Moulding

To produce rod lengths to 2000mm we use a unique process for low stress material for high precision machining within a narrow tolerance band.

- Rod: 3mm – 100mm diameter up to 3000mm length
- Rod: up to 1500mm diameter at various lengths
- Tube: 20mm – 1500mm OD at various lengths

Moulded Sheets

- 8mm - 100mm thick to a maximum size of 1200mm square
- Sheets may be supplied as cut pieces or machined into individual shapes
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Dimpled Sheets

- 3.0mm, 4.5mm and 5.0mm thick up to 1220mm square
- Bridge and pot bearings: 4.5mm or 5.0mm thick; supplied as sheet or machined to size
- Available in filled grades of PTFE
- Dimpled sheets either to BS 5400 or EN1337-2

Special Products

- Amorphous clear PCTFE sheet for chemically resistant sightglass covers
- Custom shaped moulded billets and sheet using low cost tooling
- Lining of customer steelwork
- Precision grinding service for close tolerance
- Injection moulded PEEK billets

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Our Range

Fluorinoid® Materials

Our company Fluorinoid® register, based on PTFE and thermoplastic technologies, includes over 500 materials that offer exceptional characteristics enabling them to operate in demanding environmental conditions at temperatures to over 300°C.

Materials include:

PTFE, PEEK, PPS, PFA, PVDF, PPS, ETFE and PCTFE along with a variety of fillers, including glass, carbon, graphite, bronze, ekonol™ and aluminium.

Service

- **Advice on material selection to meet specific applications**
- **Customer specific blends including colour pigments to provide exclusivity**
- **Formulation and in-house blending of special material compounds in a clean and controlled environment**
- **Testing of materials and finished products to a wide range of European, US and International standards**
- **Prototyping available**
- **Materials conditioned and stress-relieved to ensure optimum quality when machining to tight tolerances**
- **Advanced Surface Coatings from our F-LON® range includes Sol-Gel Ceramic Technology**
- **Exceptional Characteristics**
- **High chemical resistance**
- **Low co-efficient of friction**
- **Exceptional dielectric properties**
- **Thermal insulation**
- **Good wear resistance**

We ensure the highest standards of finished product by retaining complete control of the manufacturing process, whilst converting compounds into semi-finished products.

Compounds can be moulded or extruded to produce stock shapes or machined into components to suit individual specifications offering high quality, end-to-end service that is second to none.

As one of the largest UK manufacturers of semi-finished virgin and filled PTFE sheet and tape we ensure each product is tailored to meet customer requirements.

Our extensive range of PTFE sheets and tapes includes dimpled, moulded, skived and self-adhesive; available in a variety of thicknesses. A fast turnaround service is available on non stock items and same day dispatch on all standard stock items.



Our Range

Typical Applications

Manufacturers in the aerospace, automotive, electronics and energy industries are making the choice to specify metal alternatives, significant weight reductions, and improved properties of performance polymers.

Unlike with metal components, by using high performance polymers, engineers can reduce processing cycle times and increase durability in demanding environments. Some of the key benefits of replacing metals with polymers include:

Weight reductions of up to 80%
30% faster installation times
Up to 5x higher mechanical properties

Typical Applications:

- Valve Seats
- Precision Spindles
- Automotive Components
- High Precision Medical Components
- Prototype and Production
- Helicopter Gearboxes
- Traction Motors
- Construction Equipment
- Wind Turbines
- Roller Bearings
- Medical Components
- Particle Filters
- Electronic Tooling



Our Range

Industries Served

Fluorocarbon is one of the largest fluoropolymer processors. Our solutions have been installed in more than 60 countries and across all continents

Aerospace

With customer approvals including Airbus UK, Rolls Royce and BAE Systems, our products are deployed across applications in major commercial and military aircraft programmes.

Chemical Processing

We supply a vast range of high performance components that allow operation over a wide temperature range, whilst offering outstanding chemical resistance and flexibility.

Food

Offering a wide range of products to suit applications in the food & beverage and industrial bakeware market, we take great care to ensure that FDA approvals are met.

Medical & Pharmaceutical

Chemical resistant components are manufactured specifically to meet the rigorous demands of sensitive medical device applications.

Semi-conductor

Semicon OEMs across the world are supplied with critical components for use in sophisticated wafer-processing equipment.

Water & Environmental

Our high purity and ozone resistant products are manufactured to offer longevity and perform in specific customer environments.

Automotive

We are committed to the manufacture of products to meet our automotive customers' present and future requirements. Our cost-effective components offering longevity meet the high quality demands dictated by APQP, PPAP and SPC.

Off-highway

The arduous off-highway and construction industry requires products that can withstand extreme physical displacement. With this in mind, we manufacture resilient components that also offer exceptional weather and abrasion resistance.

Oil, Gas & Petrochemical

The oil and gas industry is provided with a wide variety of components for applications manufactured to withstand the most extreme pressures and temperatures such as sub-sea constructions, platforms and process plants.

Our Service

Machining Capabilities

Fluorocarbon offer a wide range of modern manufacturing services which can be utilised in the production of high precision machining. We provide machined plastic solutions in the form of prototype, components and assemblies for many industries including Oil & Gas, Marine, Defence, Telecommunications and Aerospace.

With over 15 state-of-the-art auto bar-fed CNC machines spread over 2 areas we offer faster, more precise and cost-effective machined parts that bring benefits to our customers.

Our extensive experience in conventional and CNC axis turning and milling, offers precision machining to tight tolerance which results in the highest accuracy and quality parts tailored to individual customer requirements.

Working in partnership we aim to provide innovative solutions to your requirements. Our value proposition includes technical advice on material selection, making it easy for our customers to do business with us.

With sites both in the UK and Europe, utilising the latest technology, we specialise in precision machining of all engineering plastics especially concentrating on our 50+ years machining fluoropolymers.

Our full plant list is available on our website <http://www.fluorocarbon.co.uk/downloads/leaflets - Machining Capability>



Our core values of customer focus, high quality and commitment ensure we differentiate from our competitors



Annealing

Annealing is a heat treatment that alters the physical and sometimes chemical properties of a material to increase its ductility and reduce its hardness, making it more workable. Material conditioning prior and during multi-operation machining is essential to virtually eliminate the well-known phenomenon of material size changes after machining.



Our Service

S services

Precision Grinding

We offer a precision grinding service to ensure close tolerance rods for modern machining. We ensure a high level of surface finish with a constant tolerance from batch to batch.

Whether prototype or volume manufacturing, our state of the art facilities including: milling, turning centres, CNC lathes and multi axis CNC and sliding head machines enable us to offer a service tailored to meet specific customer requirements.

We can supply low to medium batch quantities to large batch runs and long term specialised contracts. The materials machined are PTFE, PCTFE, PEEK, Nylons, Plastics Rigid Form, Ferrous and Non-Ferrous metals and other high performance specialist materials.

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Etching and Bonding

PTFE is well-known for being a non-stick material; therefore, to enable bonding to other substrates, surface modification in the form of chemical etching is required.

Our Fluoroetch® HD sodium / ammonia process is the most effective etching medium available. We offer a full in-house service of comprehensively tested chemical etching and bonding of fluoropolymers, including PTFE, PFA, ECTFE, PCTFE, FEP and TFM.

Etching

- Up to 1.2m width on one or both sides
- Etchant is specifically prepared for each batch run to ensure ultimate bond strength
- Etched sheet can be factory bonded for the manufacture of expansion bearings, slide bearings and skidways
- Etching of free-issue materials in sheet form or finished components

Bonding

- Dedicated hot and cold cure bonding service
- Sheet sizes up to 3m x 1.5m can be bonded at any one time
- Lengths up to 8m have been bonded
- Bonding of materials include: PTFE, rubber, steel, cork and wood
- Adhesives available include: epoxy, contact and isocyanate's

Coatings

As a leading coating provider Fluorocarbon Surface Technologies offer a diverse range of industrial coatings for metal and plastic. F-LON® High Build coatings have been developed to provide the ultimate in chemical protection. The range, based on high performance melt processable fluoropolymers including ECTFE, PFA and ETFE, has been formulated to provide enhanced toughness and chemical protection.

Within the Companies in the Fluorocarbon Group, we can offer our customers a true 'One stop shop' and shorten the supply chain, providing advice on material selection, subcontracting services and coatings. Fluorocarbon also work in collaboration with our customers to provide specific material solutions.



Our Service

I njection Moulding

This manufacturing technique for making parts is one of the most common methods of production. The molten plastic is injected at high pressure into a mould cavity that defines the shape of the moulded part.

Our wide range of specially modified injection moulding machines provides the capabilities to manufacture a wide variety of customer components from thermoplastics and fluoropolymers including PFA, FEP, PCTFE, PEEK, ETFE, ECTFE, PES, PAI, PPS, LCP, TPE (Thermo plastic elastomers) Nylon, Acetal.

Optimized for cost and reliability, our facilities mould complex shapes in high volume production and/or one-off bespoke parts for a specific application. Using our unique tooling system we can supply samples and prototypes prior to production.

Machine Modification

- Special barrels and screws to prevent machine corrosion when processing fluoropolymers
- Special heaters to allow proving of materials with temperatures in excess of 400°C
- Desiccant dryers to remove all traces of moisture from normal and hygroscopic moulding
- High temperature oil heaters for better control and ensures moulds are heated and maintained at the correct temperature

Capabilities

- Insert and Over moulding (moulding to another material e.g. metal)
- Semi-finished Near Shape moulding
- Moulding machine capacity: 25-220 tonne clamp force
- Shot weights: 0.5 gram - 500 gram
- Ability to process materials in excess of 400°C
- Post Moulding operations



For more information on our Injection Moulding Services or for advice on your specific requirements, please contact our technical engineers today

Our Service

We can offer the following service

- Ultrasonic welding
- Machining
- Assembling
- Printing



Our Service

Quality

At Fluorocarbon it is our policy to continually improve our Quality Management System and every level of our organisation is focused on satisfying and exceeding the needs and expectations of our customers.

Emphasis is placed on quality throughout the production process, commencing with incoming raw materials, through manufacture and concluding with inspection and delivery of the finished product. We ensure that everyone who has a direct influence on the quality of our products has the skills and training to achieve these ideals.

Laboratory Testing

Using our modern, qualified laboratory, we offer full traceability on all products and materials and ensure the highest quality finish. Day-to-day testing and analysis to international standards includes ASTM, DIN, BSI and ISO.

Testing carried out includes, but is not limited to: tensile, elongation, density, hardness zero strength time and peel testing.

Inspection

- Inspection to BS EN 10204:2004 (metallic & non-metallic parts)
- Aerospace FAIR to AS 9102 Rev B
- Sampling to ISO 2859-1:2011, AQL1.0

Facilities

- Coordinate Measuring Machine (CMM)
- Shadow Graph
- Surtronic for Surface Measurement
- Height Gauge
- Ring Gauges, Slip Gauges, Ball Gauges, Thread Gauges
- Various hand held measuring instruments viz. Micrometre, Vernier, etc.
- Permeability meter
- Tessa Visio

Test and Measurement

- Ultrasonic Testing
- Dye Penetration Testing
- Surface Testing
- Pressure Testing
- DFT Testing
- Compression Testing
- Stability Testing
- Lap Shear Testing
- Tensile, Elongation, Hardness & SG Testing
- Melt Flow & ZST Testing
- Non Magnetic Testing

FAIR/PPAP

Production Part Approval Process (PPAP) is used in the automotive supply chain for establishing confidence in component suppliers and their production processes. Actual measurements are taken of the parts produced and are used to complete the various test sheets of PPAP

A First Article Inspection Report (FAIR) is a formal method of providing a measurement report for a given manufacturing process. The method consists of measuring the properties and geometry of an initial sample item against given specifications, for example a drawing.

Environmental Policy

We regard environmental issues amongst our highest priority and continuously seek to improve our performance. Reducing carbon footprint is now fundamental to many organizations. We strive to minimise any potential impact on employees, customers, the general public and the natural environment by complying with all relevant legislations.



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The following trademarks are the intellectual property of Fluorocarbon Group Limited: F-LON®