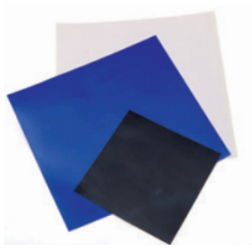
FLUOROCARBON

HIGH PERFORMANCE ENGINEERING PLASTICS AND STOCK SHAPES



Our Range

PTFE Rod & Tube

Extruded rod & tube, moulded rod & tube and PTFE sheet & tape are manufactured to the highest quality and using our Fluorinoid® materials range, products are available in a wide variety of filled grades.

We provide a variety of products for applications in many industries, including:

- Aerospace
- Electronics
- Oil & Gas
- Medical & Pharmaceutical
- Transportation
- Chemical

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: 6mm - 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 – 50mm diameter up to 2000mm length
- Rod: up to 1500mm diameter at various lengths
- Tube: 20mm – 1500mm OD at various lengths

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.

For more information on our semi-finished products or for advice on your specific requirements please contact our design and technical engineers today

Our Range

High Performance & Melt Fluoropolymer

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.

Melt Extrusion

- Rod: 3mm – 100mm diameter up to 3000mm length
- Tube - Heavy wall: 20mm ID to 100mm OD in a variety of lengths
- Sheet: up to 180mm width x 1000mm length x 50mm thickness

Hot Compression Moulding

- Rod: 28mm – 200mm diameter up to 200mm length
- Tube:

- 25mm – 100mm ID x 50mm – 150mm OD up to 200mm length
- 10mm – 250mm ID x 125mm – 300mm OD up to 150mm length
- 275mm – 500mm ID x 350mm – 550mm OD up to 100mm length
- 525mm – 850mm ID x 600mm – 940mm OD up to 60mm length

- Sheet: 300mm length x 300mm width up to 40mm thickness

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

With over 50 years of experience in the manufacture of PTFE, melt fluoropolymers and high performance polymers, our range of engineering plastics and stock shapes is one of the most extensive in the world.

Our Range

PTFE Sheet & Tape

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.

Using our in-house services all items can be supplied chemically etched on one or both sides using the Fluoroetch® HD etching process.

Skived Tape

- 0.1mm - 6mm thick, max width 1220mm
- Available in continuous rolls, cut sheets or slit to a specific width
- Filled grades can be manufactured up to 1000mm wide

Moulded Sheets

- 8mm - 100mm thick to a maximum size of 1200mm^2
- Sheets may be supplied as cut pieces or machined into individual shapes

Self-Adhesive Backed Tape

(Fluoroetch® SA)

- Four standard thicknesses; 0.13mm, 0.25mm, 0.40mm and 0.50mm
- Available as continuous rolls and slit to specific widths
- Food approval (FDA & ISO) used for lining, hoppers and chutes

Dimpled Sheets

- 3.0mm, 4.5mm and 5.0mm thick up to 1220mm^2
- 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

Fluoropack® PTFE/Cork Laminate

- Sheets available 1200mm x 600mm by 2.5mm thick - for blister pack tools

PTFE Coated Glass Cloth

- Available as 1000mm wide rolls or slit to customer requirements
- Ideal for heat wrapped packaging

Our Services

Etching & 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.

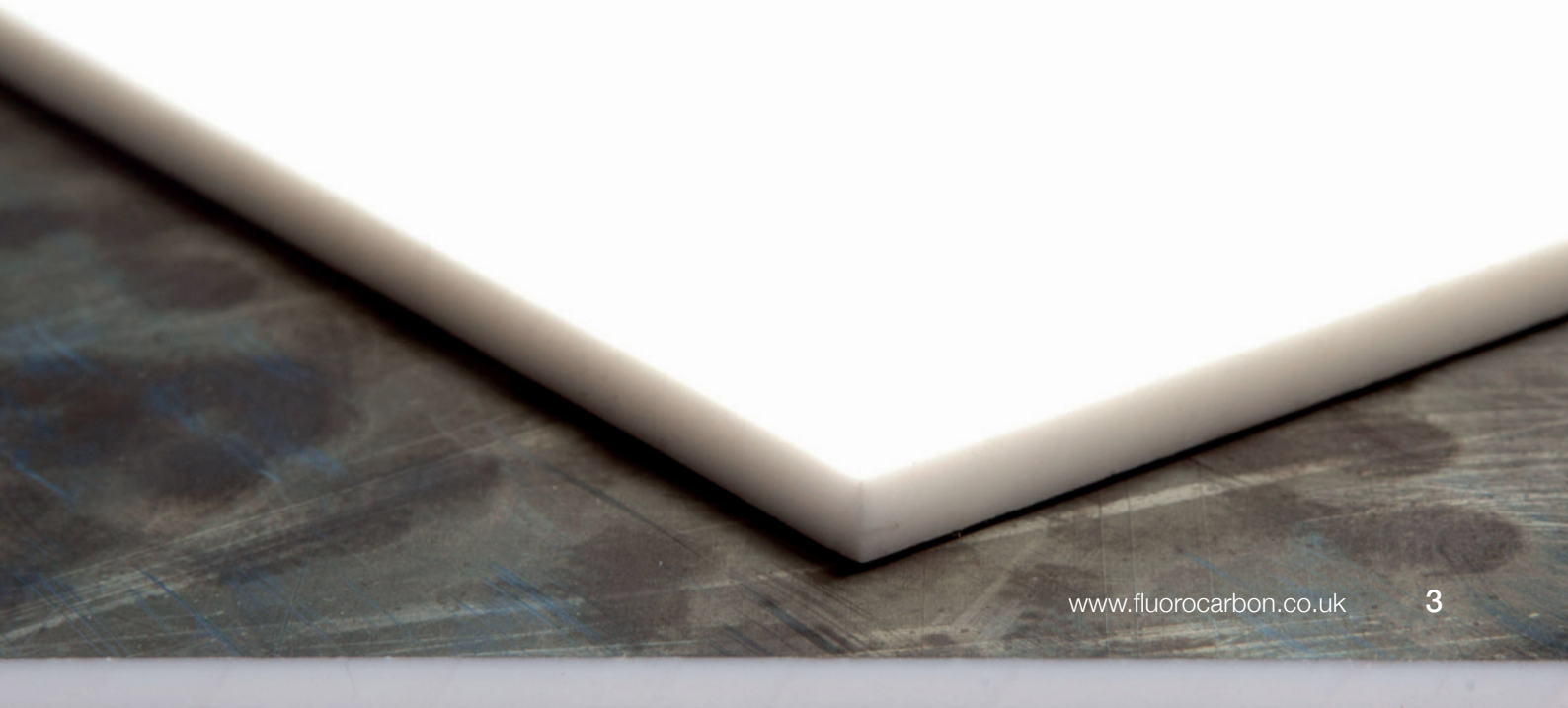
Our Fluoroetch® HD sodium / ammonia process is the most effective etching medium available. We offer a full in-house service of comprehensively tested chemical etching and bonding of fluoropolymers, including PTFE, PFA, ECTFE, PCTFE, FEP and TFM.

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 isocyanates



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

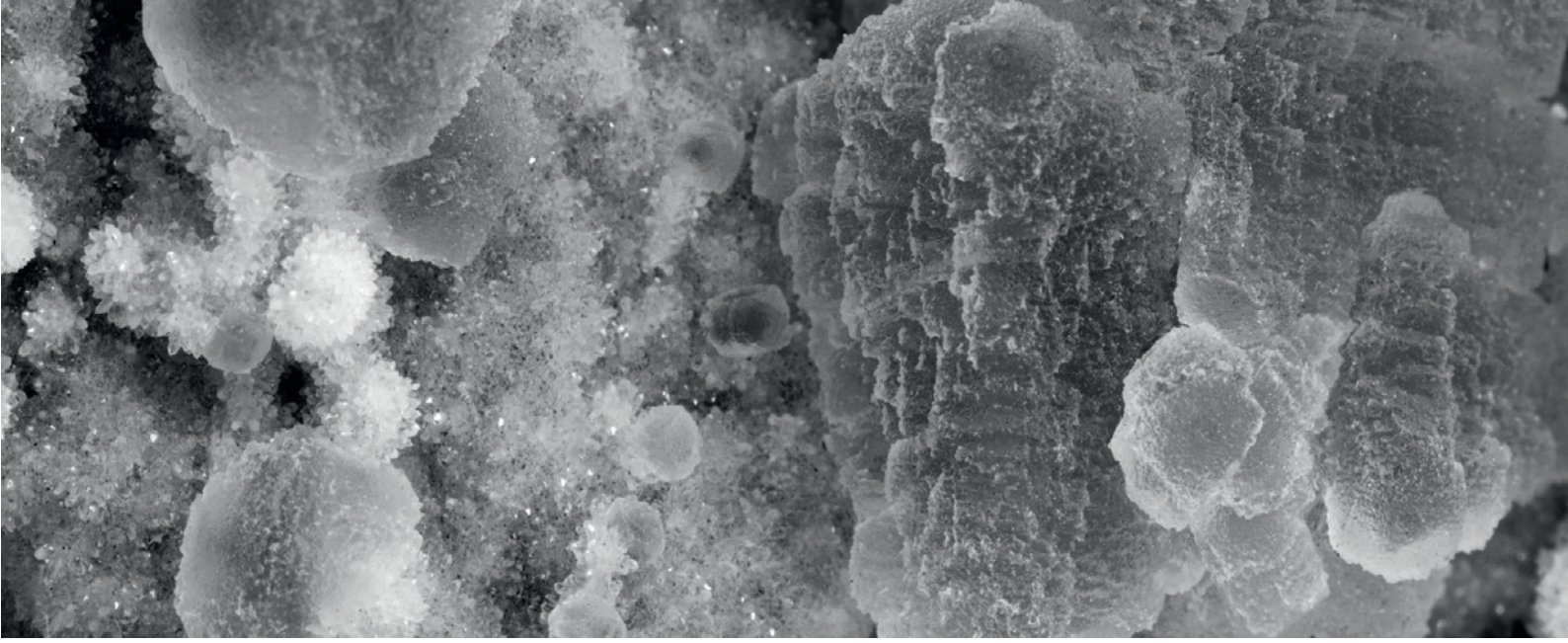
- Product design and advice on material selection to meet specific applications
- Customer specific blends including colour pigments to provide exclusivity
- Formulation and in-house blending of special material compounds in a clean and controlled environment
- Testing of materials and finished products 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

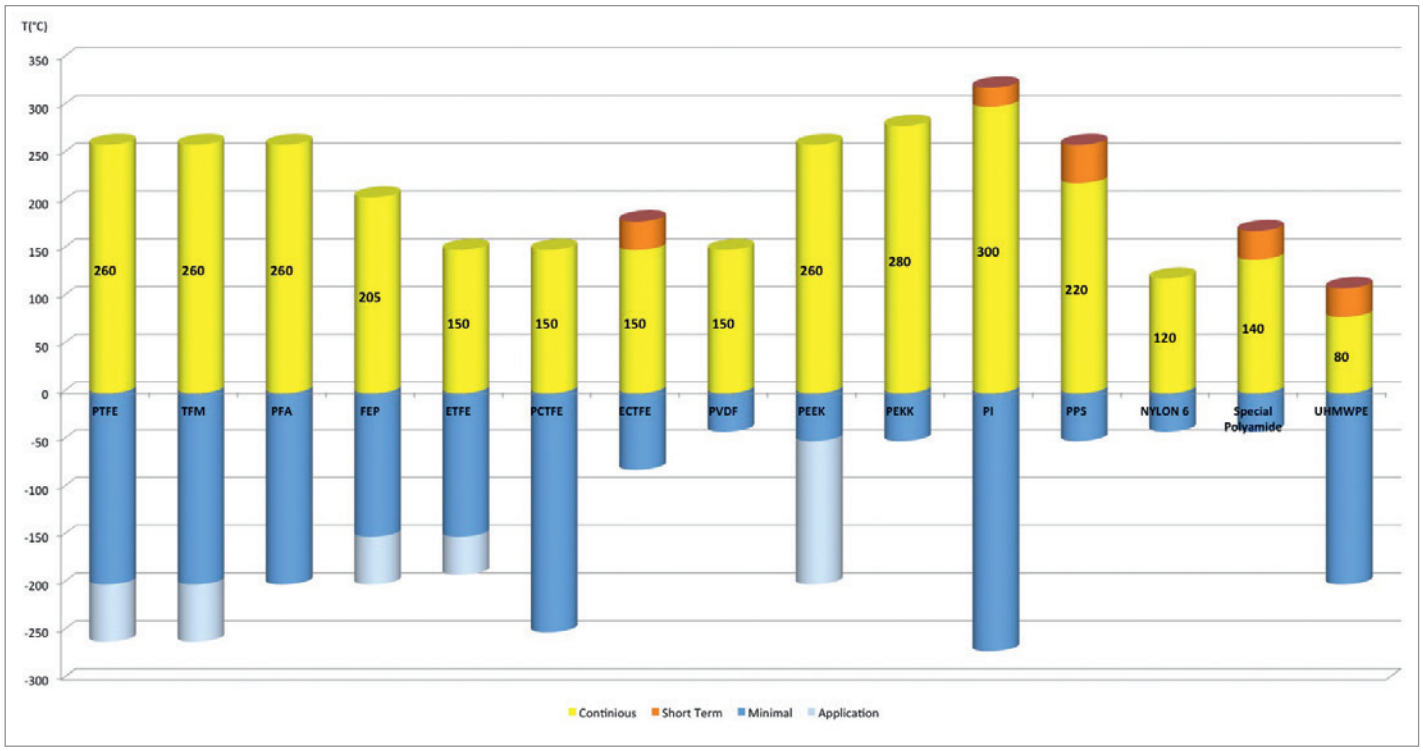
- High chemical resistance
- Low co-efficient of friction
- Exceptional dielectric properties
- Thermal insulation
- Good wear resistance

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.



Service Temperature



The graph indicates generic minimum and maximum temperatures for different polymers in Yellow and Blue respectively; the printed figured on each is the maximum continuous temperature possible. The extended range in Orange and Grey demonstrates that the polymers temperature envelope can be increased for specific applications and/or for short term use.

	PTFE	TFM	PFA	FEP	ETFE	PCTFE	ECTFE	PVDF	PEEK	PEKK	PI	PPS	Nylon 6	Special Polyamide	UHMWPE
Short Term							180				320	260		170	110
Continuous	260	260	260	205	150	150	150	150	260	280	300	220	120	140	80
Minimal	-200	-200	-200	-150	-150	-250	-80	-40	-50	-50	-270	-50	-40	-40	-200
Application	-260	-260		-200	-190				-200						

The above physical properties are typical values for comparative purposes only and do not represent a product specification. Properties will vary depending on the source of raw material, method of processing, physical form of the product or direction of measurement etc. The above properties must not be used for design purposes. For the correct properties in a specific application please refer to our Technical Department.

Typical Properties Table

Fluoropolymers and Engineering Plastics													
		General			Mechanical					Electrical		Thermal	
Fluorinoid® grade	Material	Density	Flam-mability	Water absorp-tion	Tensile strength at 23°C	Elongation at break at 23°C	Rockwell hardness	Shore hardness D	Coefficient of friction	Volume resistivity	Dielectric strength	Coefficient of linear expansion	Maximum continuous operating temperature
		g/cm^3		%	N/mm^2	%				Ωcm	KV/mm	1/K 10^3	°C
FL100	PTFE Virgin	2.14-2.19	NC	0.00	20-40	200-450		55-65	0.05-0.2	10^{18}	40-80	12-16	260
FL105	PTFE 25% Glass	2.24	NC		12-20	200-300		60-70	0.07-0.2			11-15	260
FL115	PTFE 25% Carbon	2.10	NC		11-16	70-150		60-70	0.1-0.2			8-11	260
FL141	PTFE 60% Bronze	3.90	NC		10-14	80-160		65-75	0.07-0.2			9-14	260
FL200	Modified PTFE	2.16	NC		30	375		56	0.05–0.20	>10^{18}	70	12-17	260
FL305	PFA	2.12-2.17	NC	<0.03	25-32	300		60-65	0.2-0.3	>10^{18}	50-80	12-16	260
FL304	FEP	2.12-2.17	NC	<0.01	19-25	250-350		55-60	0.2-0.3	>10^{16}	50-80	8-14	200
FL300	ETFE	1.70-1.75	SE	<0.1	36-48	200-500	R45-55	70-75	0.3-0.5	>10^{16}	60-90	5-9	150-180*
FL308	PVDF	1.75-1.78	SE	0.05	30-50	20-250	R100-115	75-85	0.2-0.5	10^{14}	40-80	8-12	150-170*
FL346	ECTFE Halar®	1.67-1.70	SE	<0.1	41-54	200-300	R85-95	70-80	0.2	10^{15}	50	4-7	150-180*
FL325	PCTFE	2.10-2.16	NC	<0.01	31-42	80-250	R103-118	70-90	0.2-0.3	>10^{17}	50-70	4-8	150-180*
FL347	Vespel® SP1	1.35-1.45	SE	1-1.3	45-86	2-8	E45-60		0.2-0.35	10^{14}-10^{15}		4-6	300
FL348	PPS	1.34	NC	0.07	70	3	M93		0.24-0.3	10^{16}	20	7	200
FL341	PES	1.37	NC	2.2	85	30	M88		0.27-0.32	10^{16}	16	3-6	180
FL350	PEEK	1.30	NC	0.5	105	110	M99		0.2-0.25	10^{16}	19	7	260
FL340	UHMPE	0.94	C		20-40	300-500		60-70	0.15-0.3	10^{17}	90	20	80
FL349	NYLON 6	1.10-1.15	C	9-10	40-80	80-100	M80		0.22-0.26	10^{13}	35	8	90
FL328	NYLON 66	1.10-1.15	C	7.5-9.5	40-85	60	M80		0.2-0.28	10^{15}	30	7-10	90
FL333	NYLON 12	1.01-1.05	C	1.5-2	40-60	150-350	M82			10^{15}	35	8-15	70
FL339	HDPE	0.945-0.963	C		19-35	300-500	M75-80	62-69	0.3-0.35	10^{17}	60-90	15-20	80
FL321	ACETAL	1.40-1.42	C	0.8	70	30-80	M80		0.14-0.35	10^{15}	20	11	85-145*

NC - Non-combustible SE - Self-extinguishing C - Combustible

The above physical properties are typical values for comparative purposes only and do not represent a product specification. Properties will vary depending on the source of raw material, method of processing, physical form of the product or direction of measurement etc. The above properties must not be used for design purposes. For the correct properties in a specific application please refer to our Technical Department.

Halar® registered trademark of Solvay, Vespel® registered trademark of DuPont. *Upper temperature dependent on application, please call for assistance.

Our Range

NORSOK Approved

Material Code	Polymer Type	Meet NORSOK M-710 Acceptance Criterion			
		Swell1	Tensile Modulus2	Tensile Strength2	Strain2
FL010	Virgin PTFE	YES	YES	YES	YES
FL011	Filled PTFE	YES	YES	YES	YES
FL012	Filled PTFE	YES	YES	YES	YES
FL013	Filled PTFE	YES	YES	YES	YES
FL014	Filled PTFE	YES	YES	YES	YES
FL015	Filled PTFE	YES	YES	YES	YES
FL020	Modified PTFE	YES	YES	YES	YES
FL021	Modified Filled PTFE	YES	YES	YES	YES
FL030	Virgin PEEK Black	YES	YES	YES	YES
FL031	Filled PEEK	YES	YES	YES	YES

Fluorocarbon are pleased to announce we have been awarded NORSOK M-710 approval for 10 of our Fluorinoid® materials.

The NORSOK M-710 specification underlines the need for oilfield equipment OEMs to achieve higher levels of quality and compatibility for non-metallic seals used in oilfield equipment.

Although this started with mainly Norwegian or European requests for NORSOK M-710 approved materials it has now extended across the globe, making NORSOK into an internationally recognized standard.

Our Service

Quality & Testing Facilities

Using our modern, qualified laboratory, we offer full traceability on all products and materials and ensure the highest quality finish.

Our quality system is to ISO9001:2008, with day-to-day testing and analysis to ASTM, DIN and BSI standards. Testing includes, but is not limited to: tensile, elongation, density, hardness zero, strength time and peel testing.

Our products are tested to ISO Standards

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