

Fluoropolymers for  
**Greases & Lubricants**

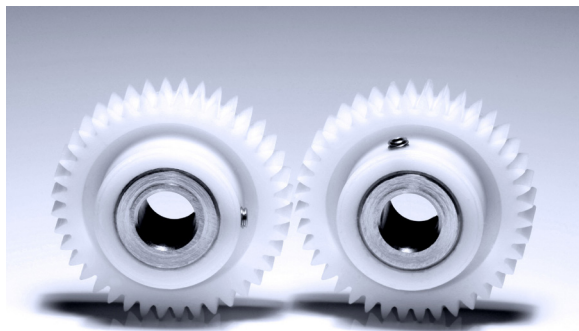
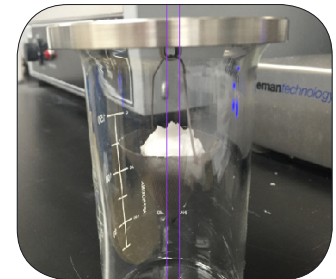
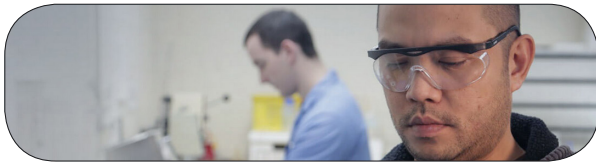


**SHAMROCK**



# Providing Quality Solutions With State-of-the-Art In-house Grease Testing Capabilities

Shamrock Technologies produces fluoropolymer based lubricating micropowders designed for a variety of applications in greases and industrial lubricants where wear resistance and thickening efficiency is required.

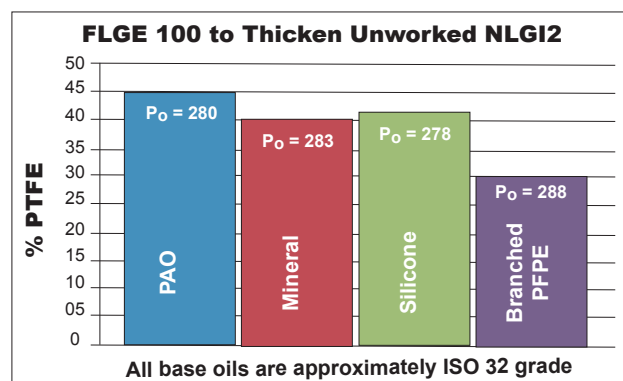


## ANTI-WEAR PERFORMANCE:

- Increases as Molecular Weight decreases
- Primary Particle Size can also affect anti-wear performance
- Depends on contact surface (point, line, plane)
- Submicron particles better for point or line contacts
- Larger particles are better for planar contacts

## PTFE THICKENING EFFICIENCY:

- Increases as Primary Particle Size decreases
- Increases as Bulk Density decreases
- Increases with Molecular Weight
- Thickening efficiency also depends on the type of base oil



## New Fluoro GF-120

Fluoro GF-120 is a FEP (Fluorinated Ethylene Propylene Copolymer) micropowder with very small particle size. It has good thickening efficiency in various hydrocarbon and fluorinated oils due to its large specific surface area.

Product	Particle Size MV (µm) ISO 13320	Four Ball Wear Scar (mm) ASTM D-226	Cone Penetration (1/10 mm) ASTM D217	Bulk Density (g/l) ASTM D4894	DSC Melting Point (°F/°C) ASTM D-4591)
Fluoro GF-120	3-8	≤ 0.55	340-380	200-400	491/255

# Micronized Powders and Dispersions

## GE Series - High Thickening Efficiency

**Fluoro GE** sub-micron PTFE are powders made from emulsion grade prime PTFE. These products cover a range of molecular weights. GE products have a larger specific surface area compared to other PTFE.

Product	NSF	Particle Size MV (µm) ISO 13320	Cone Penetration (1/10 mm) ASTM D217	Bulk Density (g/l) ASTM D4894	DSC Melting Point (°F/°C) ASTM D-4591	4 Ball Wear Scar (mm) ASTM D-226
Fluoro GE-100	HX-1, HX-2	< 1	220-270	200-400	626/330	≤ 0.65
Fluoro GE-125	-	< 1	240-280	200-400	620/327	≤ 0.50
Fluoro GE-150	-	< 1	260-290	200-400	619/326	≤ 0.40

## GS Series - Moderate Thickening Efficiency

**Fluoro GS** powders are made from unsintered, suspension grade prime PTFE. GS products are characterized by the uniform, crystalline structure of PTFE, providing increased slip and abrasion properties.

Product	NSF	Particle Size MV (µm) ISO 13320	Cone Penetration (1/10 mm) ASTM D217	Bulk Density (g/l) ASTM D4894	DSC Melting Point (°F/°C) ASTM D-4591	4 Ball Wear Scar (mm) ASTM D-226
Fluoro GS-100	-	~4	355-385	300-550	620/327	≤ 0.65
Fluoro GS-115	HX-1, HX-2	4-6	300-330	300-550	626/330	≤ 0.65
Fluoro GS-125	HX-1, HX-2	10-12	335-365	300-550	626/330	≤ 0.65

## GT Series - Low Thickening Efficiency

**Fluoro GT** PTFE micro powders are made from recycled, highly crystalline, sintered PTFE. These products can be added with minimal to no change to the viscosity of the system. They impart excellent lubricity and wear resistance.

Product	Particle Size MV (µm) ISO 13320	Cone Penetration (1/10 mm) ASTM D217	Bulk Density (g/l) ASTM D4894	DSC Melting Point (°F/°C) ASTM D-4591	4 Ball Wear Scar (mm) ASTM D-226
Fluoro GT-103	~3	360-420	400-600	608/320	≤ 0.65
Fluoro GT-105	~5	370-430	400-600	608/320	≤ 0.70
Fluoro GT-110	10-12	420-470	400-600	617/325	≤ 0.70
Fluoro GT-130	25-35	> 475	500-800	617/325	≤ 0.70

## PTFE Dispersions

Our line of NanoFLON® dispersions features sub-micron PTFE particles dispersed in your choice of mineral oil, polyisobutene or polyalphaolefin.

Product	Carrier	Particle Size MV (µm) ISO 13320	Active Ingredients	Vehicle Flash Pt./ Pour Point (°C)	Viscosity (cPs)	Features & Benefits
NanoFLON® PAO30	Polyalphaolefin	< 1	30%	263/-63	<2000	Stable Dispersion, Ease of Incorporation, Improved Anti-Wear, Improved Lubricity
NanoFLON® PIB25	Polyisobutene	< 1	25%	138/-51	<3000	
NanoFLON® MO20	Mineral Oil	< 1	20%	227/-10	<2000	
FluoroSPERSE® PAO15	Polyalphaolefin	< 1	15%	263/-63	< 3500	

# Boost the Performance of Your Critical Lubricating Fluids

Grease and Lubricants Product Selection Guide																
	Fluoro GE 100	Fluoro GE 125	Fluoro GE 150	Fluoro GS 100	Fluoro GS 115	Fluoro GS 125	Fluoro GT 103	Fluoro GT 105	Fluoro GT 110	Fluoro GT 130	Fluoro GF120	NanoFLON® MO20	NanoFLON® PIB25	NanoFLON® PAO30	FluoroSPERSE® PAO 15	
Properties	Form	Powder										Dispersion				
	Carrier											Mineral Oil	PIB	PAO	PAO	
	PTFE Content	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	20%	25%	30%	15%	
	FEP Content										100%					
	NSF	HX-1,HX-2					HX-1,HX-2		HX-1,HX-2							
	Thickening	HIGH	☘	☘	☘											
		MED				☘	☘	☘				☘				
		LOW							☘	☘	☘	☘				
	Anti-Wear	POINT	☘	☘	☘								☘	☘	☘	☘
		LINEAR	☘	☘	☘	☘	☘	☘	☘	☘	☘	☘				
PLANAR					☘	☘	☘	☘	☘	☘	☘					

# SHAMROCK

Shamrock Technologies is the global leader in PTFE micropowders. and the world's largest processor of recycled polytetrafluoroethylene (PTFE). We're also a leading worldwide supplier of micronized powders, dispersions, emulsions, and compounds including PTFE, polyethylene, polypropylene, custom wax alloys, natural waxes, and specialty waxes.

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For over 75 years, Shamrock Technologies has led the way in the processing of recycled polytetrafluoroethylene. Today, we are the world's largest recycler of PTFE with proprietary collection, cleaning, and reprocessing capabilities, state-of-the-art irradiation facilities, and precision micronization control.

Newark, NJ  
 Henderson, KY  
 Tianjin, China  
 Tongeren, Belgium



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