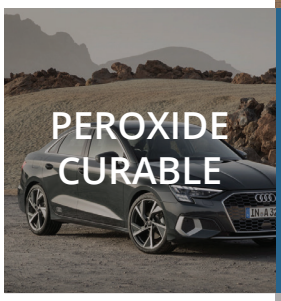
INOXGFL GROUP

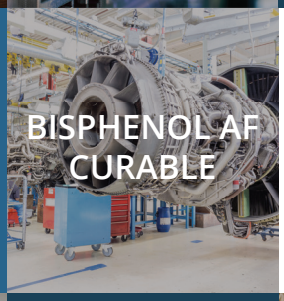
BEYOND INFINITY

FLUOROPOLYMERS

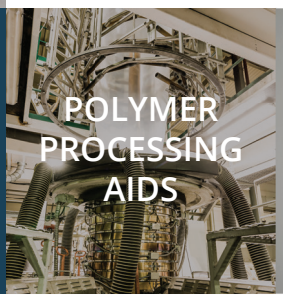
INOFLON®



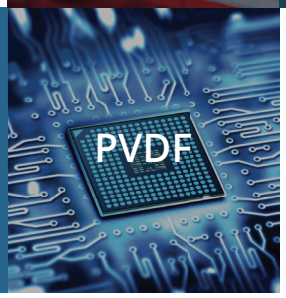
FLUONOX®
Fluoroelastomers



INOLUB®
Fluoropolymer Additives



INOFLAR®



GFL®
GUJARAT FLUOROCHEMICALS
VALUE THROUGH GREEN CHEMISTRY

ABOUT
the Company

Gujarat Fluorochemicals Limited

Headquartered in Noida, India, Gujarat Fluorochemicals Limited (GFL), is a part of the INOX group of companies. The group has diversified business segments comprising chemicals, fluoropolymers, cryogenic engineering, entertainment, industrial gases and renewable energy.

An ISO 9001:2015, ISO 14001:2015, ISO 45001:2018 and SA 8000:2014 certified organisation, GFL is a leading producer of fluoropolymers, speciality fluorochemicals, refrigerants, as well as basic chemicals for applications in a wide range of industries. GFL derives its strength from expertise in fluorine chemistry, vertical integration from natural minerals to fluoropolymers, and strong R&D, enabling it to provide our global clientele some of the best quality products in their markets, meeting all regulatory compliances.

The year 1989 marked the launch of our company's commercial operations with India's largest refrigerant manufacturing unit at Ranjitnagar, Gujarat, India. The site was further expanded to produce fluorospeciality fluorochemicals catering to the growing global demands of the agriculture and pharmaceutical industries. Foraying into new avenues in 2007, with one of the world's most integrated facilities at Dahej, Gujarat, India, and GFL now has a diverse portfolio of fluoropolymers comprising PTFE, PFA, FEP, FKM, PVDF, including fluoropolymer based additives.

With three manufacturing facilities in India, a captive fluorspar mine in Morocco, offices and warehouses in Europe and USA, and a worldwide marketing network, GFL is one of the established players in the fluoropolymer and speciality fluorochemical markets.

Our sustainability goals are interwoven with the way we do business along our entire value chain. The company is a signatory to the United Nations Global Compact (UNGC), Science-Based Targets Initiative (SBTi) and is a member of the Indian Chemical Council (ICC). Our focus on health, safety and environment is reflected in the well-being and safety of our staff and employees. All-inclusive efforts towards sustainability in all aspects of our business make us long-term partners for our customers across the globe.

Value through green chemistry

Granular Virgin PTFE Resins

PTFE has an impressive array of following properties that makes it a material of choice for various demanding applications:

- Low dielectric constant and loss factor
- Low coefficient of friction
- Broad range of service temperature (-250°C to 250°C)
- Inherent UV resistance
- Excellent chemical resistance
- Low smoke and flammability resistance
- FDA compliance for food contact

Grades and applications

Grades	Characteristics	Applications
INOFLON® 610/630/640 (Low Flow)	Fine particle size with narrow distribution High tensile and elongation	General molding Skived film and sheet Compounding
INOFLON® 210/220/230 (Free Flow)	Good flow High bulk density Good mold filling behavior	Automatic and isostatic molding of parts Molded sheets Small diameter and thin wall thickness tube
INOFLON® 510/515 (Pre-sintered)	Narrow particle size with distribution Good flow Homogeneously sintered powder	For making continuous profiles (rods and tubes) by Ram extrusion

Typical Properties

Properties	Test Method	Unit	Nominal Value							
			610	630	640	210	220	230	510	515
			Low Flow			Free Flow			Pre-sintered	
Bulky density	ASTM D 4894	g/l	450	350	325	700	775	750	500	600
Avg. particle size	ASTM D 4894	µm	190	32	23	600	500	300	575	150
Mold shrinkage	ASTM D 4894	%	3.25	3.5	4	2.50	2.25	2.25	-	-
Powder flow	ASTM D 1895	g/min	-	-	-	400	400	-	300	-
Std. specific gravity	ASTM D 4894	-	2.155	2.155	2.155	2.155	2.155	2.155	2.155	2.155
Melting points	ASTM D 4894	°C (°F)	342 (648) 321 (621)	342 (648) 321 (621)	342 (648) 327 (621)	342 (648) 327 (621)	342 (648) 327 (621)	342 (648) 327 (621)	327 (621)	327 (621)
Tensile Strength	ASTM D 4894	MPa (psi)	25 (3626)	30 (4351)	35 (5076)	30 (4351)	30 (4351)	30 (4351)	20* (3336)*	- -
Elongation	ASTM D 4894	%	250	325	350	275	275	275	200*	-

Note: These are typical properties and not to be used for specification purpose

* GFL Internal Method

Granular Modified PTFE Resins

Modified PTFE is chemically modified and has following improved properties over virgin PTFE:

- Reduced permeability
- Reduced deformation under load
- Good flexural fatigue resistance
- Smooth surface
- Higher transparency
- Weldability
- Higher di-electric strength
- Reduced stretch void index

Grades and Applications

Grades	Characteristics	Applications
INOFLON® M690/M695 (Low Flow)	Fine particle size with narrow distribution	Skived film and sheet Compounding
INOFLON® 280/M290/M295 (Free Flow)	Good flow High bulk density Good mold filling behavior	Automatic and isostatic molding of parts Ram extrusion of rods and tubes

Typical Properties

Properties	Test Method	Unit	Nominal Value				
			INOFLON® M 690	INOFLON® M 695	INOFLON® M 280	INOFLON® M 290	INOFLON® M 295
			Low Flow		Free Flow		
Bulky density	ASTM D 4894	g/l	350	350	700	750	700
Avg. particle size	ASTM D 4894	µm	25	25	500	475	475
Mold shrinkage	ASTM D 4894	%	5	5	4	4	-
Powder flow	ASTM D 1895	g/min	-	-	400	400	400
Std. specific gravity	ASTM D 4894		2.155	2.160	2.160	2.155	2.160
Melting points	ASTM D 4894	°C(°F)	342 (648) 327 (621)	342 (648) 327 (621)	342 (648) 327 (621)	342 (648) 327 (621)	342 (648) 327 (621)
Tensile strength	ASTM D 4894	MPa (psi)	30 (4351)	30 (4351)	20 (2900)	30 (4351)	30* (4351)
Elongation	ASTM D 4894	%	450	450	450	450	450*

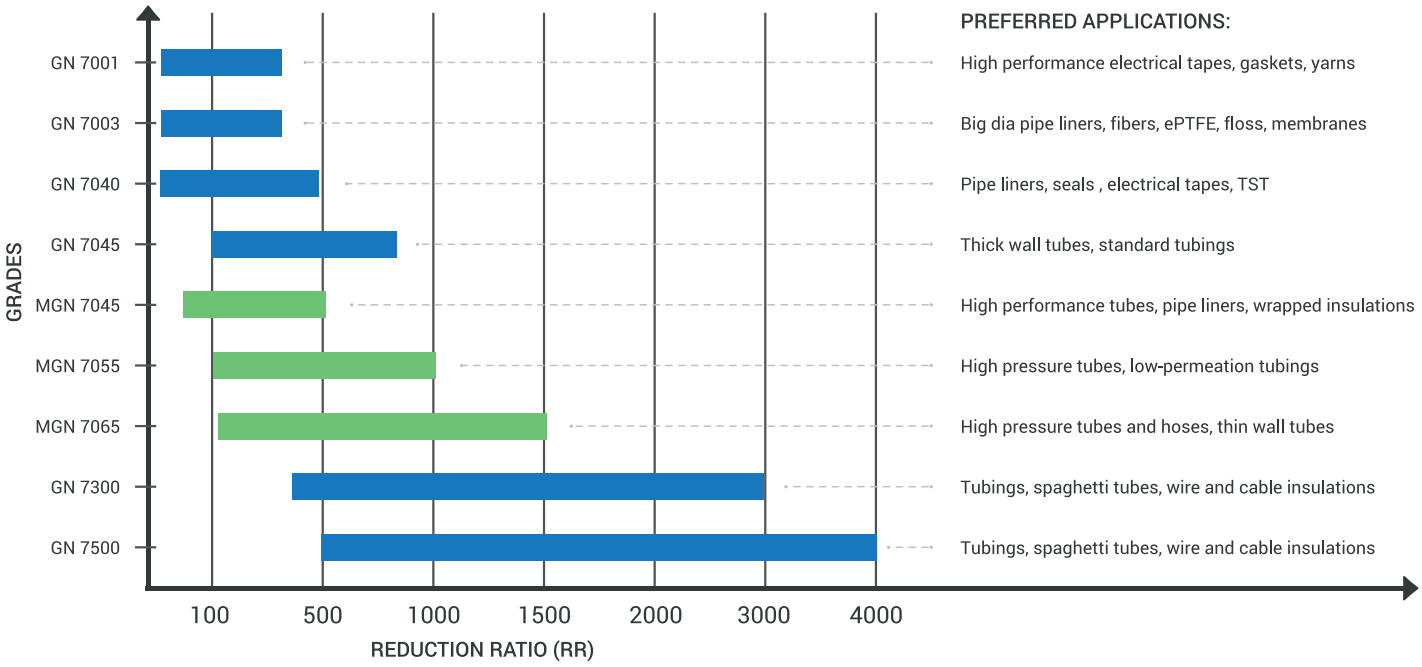
Note: These are typical properties and not to be used for specification purpose

* GFL Internal Method

Fine Powder PTFE Resins

Fine Powder PTFE Resins are polymerised in an aqueous dispersion medium made from environmental friendly emulsifier. Fine Powder PTFE Resins are milky white polymers obtained from coagulating dispersions. Hydrocarbon oils are used for processing Fine Powder PTFE Resins. They offer an impressive array of following properties that makes them the material of choice for various demanding applications. Fine Powder PTFE Resins are PFOA/PFOS free.

Fine Powder Product Portfolio



Important Properties (GN/MGM Grades)

- High dielectric strength
- Good dimensional stability
- Good fibrillation
- Good mechanical properties and ease of process ability
- Chemically inert to most industrial chemicals and solvents
- Low friction and non stick surface
- High stress cracking resistance
- Good transparency
- High burst strength
- Good surface finish
- Good weldability
- Low gas permeability
- High flex life

Typical Properties - GN Grades

Properties	Test Method	Unit	Nominal Value					
			GN7001	GN7003	GN7040	GN7045	GN7300	GN7500
Bulk density	ASTM D 4895	g/l	475	500	500	475	450	450
Avg. particle size (d_{50})	ASTM D 4895	µm	500	525	525	475	450	475
Extrusion pressure [Reduction Ratio]	ASTM D 4895	MPa (psi)	42 (6092) [RR 400:1]	42 (6092) [RR 400:1]	35 (5076) [RR 400:1]	22 (3191) [RR 400:1]	42 (6092) [RR1600:1]	28 (4061) [RR1600:1]
Std. specific gravity (SSG)	ASTM D 4895	-	2.150	2.155	2.175	2.18	2.175	2.175
Tensile Strength	ASTM D 4895	MPa (psi)	32 (4641)	33 (4786)	33 (4786)	33 (4786)	33 (4786)	30 (4351)
Elongation at break	ASTM D 4895	%	330	330	330	330	350	300

Note: These are typical properties and not to be used for specification purpose

Typical Properties - MGN Grades

Properties	Test Method	Unit	Nominal Value		
			MGN7045	MGN7055	MGN7065
Bulk density	ASTM D 4895	g/l	500	500	475
Avg. particle size (d_{50})	ASTM D 4895	µm	500	475	450
Extrusion pressure [Reduction Ratio]	ASTM D 4895	MPa (psi)	29 (4206) [RR 400:1]	22 (3191) [RR 400:1]	45 (6527) [RR 1600:1]
Std. specific gravity (SSG)	ASTM D 4895	-	2.149	2.151	2.153
Tensile Strength	ASTM D 4895	MPa (psi)	33 (4786)	33 (4786)	32 (4641)
Elongation at break	ASTM D 4895	%	330	330	350

Note: These are typical properties and not to be used for specification purpose

PTFE Aqueous Dispersions

Fluoropolymer dispersions are polymerised in an aqueous dispersion medium, made from environmentally friendly emulsifier and consists of very small particles of fluoropolymer resin. The dispersions are stabilised in water by non-ionic surfactants and are PFOA free. They offer an impressive array of following properties that makes them the material of choice for various demanding applications.

Grades and applications

Grades	Characteristics	Applications
AD9100	Good wetting properties Good penetration properties Good weatherability	Belting, architectural fabric and gaskets, packing seals and gaskets, industrial fabric, yarns and filter cloth
AD9200	High gloss Very good abrasion resistance Good corrosion resistance High shear stability	Formulations of high-performance cookware and industrial coating
AD9300	Good impregnation Low foaming Good weatherability	Architectural fabric and gaskets, packing seals and gaskets, industrial fabric, yarns and filter cloth, anti-dripping and impregnation of graphite block
AD9400	High critical cracking resistance High heat resistance	Metal coating formulation, glass cloth coating
AD9700	Good chemical resistance High heat resistance	Bearing and seals

Typical Properties

Properties	Test Method	INOFLON® AD9100	INOFLON® AD9200	INOFLON® AD9300	INOFLON® AD9400	INOFLON® AD9700
Solid content (%)	ASTM D 4441	60	60	60	60	24
Surfactant by PTFE basis (%)	ASTM D 4441	7.5	6	6	6	5
pH	ASTM E-70	>9.5	>9.5	>9.5	>9.5	>9.5
Specific gravity	ASTM D 4441	1.51	1.51	1.51	1.51	-

Note: These are typical properties and not to be used for specification purpose

Grades	Characteristics	Applications
AD9210	Excellent wetting properties Very high gloss Excellent penetration properties Bimodal particle size distribution	Belting, architectural fabric and gaskets, packing seals and gaskets, industrial fabric, yarns and filter cloth
AD9310	Excellent wetting properties Excellent chemical resistance Good weatherability High gloss	Architectural fabric and gaskets, industrial fabric, yarns, anti-dripping and impregnation of graphite block
AD9410	High gloss Low porosity High critical cracking thickness Bimodal particle size distribution	Formulations of high-performance cookware and industrial coating

Typical Properties

Properties	Test Method	INOFLON® AD9210	INOFLON® AD9310	INOFLON® AD9410
Solid content (%)	ASTM D 4441	59	60	60
Surfactant by PTFE basis (%)	ASTM D 4441	8	6.5	6
pH	ASTM E-70	>9.5	>9.5	>9.5
Specific gravity	ASTM D 4441	1.5	1.5	1.5

Note: These are typical properties and not to be used for specification purpose

Perfluoroalkoxy (PFA)

Pellet

- Service temperature up to 260°C
- Excellent dielectric properties
- Superior creep resistance at high temperatures
- Excellent low temperature toughness

INOFLON® Grade	Process Methods	Melt Flow Rate (g/ 10 min)	Specific Gravity	Melting Point (°C)	Tensile Strength (Mpa)	Elongation (%)	Applications
		ASTM D 1238	ASTM D 792	ASTM D 4591	ASTM D 3307	ASTM D 3307	
PFA 8003	Extrusion, Injection, Compression and Transfer Moulding	2.3	2.15	307	28	300	Tubes, Linings (Pipes/Valves/ fittings) and Transfer molded articles
PFA 8003HS	Extrusion, Injection, Compression and Transfer Moulding	2.3	2.15	307	28	300	Tubes, Linings (Pipes/Valves/ fittings), Transfer molded articles and semiconductor components
PFA 8015	Extrusion, Injection, Compression and Transfer Moulding	13	2.15	307	25	300	Extruded Tubes, and profile for hoses, Jacketing, Wire and cable insulation
PFA 8015HS	Extrusion, Injection, Compression and Transfer Moulding	13	2.15	310	25	300	Extruded Tubes, and profile for hoses, Jacketing, Wire and cable insulation, semiconductor applications
PFA 8005	Extrusion,injection and transfer molding	5	2.15	307	26	300	Tubing and Linings for pipes, Valves and fittings used in Chemical processing Industries and injection molded articles requiring superior electrical, chemical, and thermal properties
PFA 8005HS	Extrusion,injection and transfer molding	5	2.15	307	26	300	Semiconductor components, extrusion of electric wires and injection molded articles requiring superior electrical, chemical, and thermal properties
PFA 8025	Extrusion,injection and transfer molding	25	2.15	307	25	275	Extrusion of thin-walled electric wires and injection molded articles requiring superior electrical, chemical, and thermal properties
PFA 8025HS	Extrusion,injection and transfer molding	25	2.15	307	25	275	Extrusion of thin-walled electric wires and injection molded articles requiring superior electrical, chemical, and thermal properties
PFA 8015HSP	Extrusion,injection and transfer molding	13	2.15	307	25	300	Semiconductor components, extrusion of electric wires and injection molded articles requiring superior electrical, chemical, and thermal properties
PFA 8003HSP	Extrusion,injection and transfer molding	2.3	2.15	307	28	300	Semiconductor components, Tubing,Linings of valves and fittings used in the chemical processing Industries requiring superior electrical, chemical, and thermal properties

HS and HSP are modified grades of 8003 and 8015 with high purity, improved flex life and environmental stress cracking resistance.

Note: These are typical properties and not to be used for specification purpose

Powder

- Excellent chemical resistance
- Outstanding electrostatic characteristics
- Good transparency
- Excellent non-stick performance

Grades / Test Method	Process Methods	Melt Flow Rate (g/10 min) ASTM D 1238	Particle Size (µm) Inter-nal	Bulk Density (g/l) ASTM D 1895	Specific Gravity ASTM D 792	Melting Point (°C) ASTM D 4591	Tensile Strength (MPa) ASTM D 3307	Elongation (%) ASTM D 3307	Applications
PFA 8103	Electrostatic powder spray	2.3	7	500	2.15	307	28	300	Powder coating for chemical and industrial equipment, cookware & bakeware
PFA 8115	Electrostatic powder spray	10	7	500	2.15	307	25	275	Powder coating for chemical and industrial equipment, cookware & bakeware

Note: These are typical properties and not to be used for specification purpose

Dispersion

- Non-stick properties
- Inert to chemicals and solvents
- Excellent surface release properties
- Excellent weatherability

Grades / Test Method	Process Methods	Melt Flow Rate (g/10 min) ASTM D 1238	Solid Content (%PFA resin by weight) ASTM D 4441	%Surfactant Content on PFA Solid ASTM D 4441	Specific Gravity ASTM D 792	Average Particle Size (nm)	pH of Dispersion ASTM E 70	Melting Point (°C) ASTM D 4591	Applications
PFA 8900	Dipping Impregnating Spraying	15	50	6	1.4	170	>9.5	307	Coating and impregnating glass fibre fabrics, metal substrate, woven packing
PFA 8910	Dipping Impregnating Spraying	2	60	6	1.5	170	>9.5	307	Coating and impregnating glass fibre fabrics, metal substrate, woven packing
PFA 8900EX	Dipping, Impregnating, Spraying	15	50	6	1.4	170	>9.5	307	Coating and impregnating glass fibre fabrics,metal substrate,woven packing.

Note: These are typical properties and not to be used for specification purpose

Fluorinated Ethylene Propylene (FEP)

Dispersion

- Stability at high temperatures
- Inert to chemicals and solvents
- Excellent weatherability and incombustibility
- Excellent stress cracking resistance

Grades / Test Method	Process Methods	Melt Flow Rate (g/10 min) ASTM D 1238	Solid Content (%PFA resin by weight) ASTM D 4441	%Surfactant Content on PFA Solid ASTM D 4441	Specific Gravity ASTM D 4441	Average Particle Size (nm)	pH of Dispersion ASTM E 70	Melting Point (°C) ASTM D 4591	Applications
FEP 4910	Dipping Impregnating spraying	10	55	6.50	1.45	170	>9.5	270	Coating and impregnating glass fibre fabrics, metal substrate, woven packing

Note: These are typical properties and not to be used for specification purpose

Fluoroelastomers

Grades	Fluorine Content (%) Internal NMR	TR 10 (°C/°F) ASTM D 1329	Mooney Viscosity ML (1+10) @ 121°C (250°F) ASTM D 1646	Hardness (Shore A) ASTM D 2240	Tensile Strength* MPa (psi) ASTM D 412C	Elongation at Break* (%) ASTM D 412C	Compression Set* (%) ASTM D 395 Method B	Product suggested uses/applications
Bisphenol Curable								
Copolymers Raw Gums								
KR 220	66.0	-18 (-0.4)	22	76	14.0 (2031)	190	17	Low viscosity copolymer – General purpose
KR 235	66.0	-18 (-0.4)	28	76	14.0 (2031)	200	17	Medium/low viscosity copolymer – General purpose – Injection molding. FDA**
KR 250	66.0	-18 (-0.4)	46	77	14.0 (2031)	190	17	Medium viscosity copolymer – General purpose – Injection molding. FDA**
Cure Incorporated Copolymers								
KB 2250Z	66.0	-18 (-0.4)	23	74	14.0 (2031)	240	20	Injection molding of complex shapes – Metal bonding
KB 2252	66.0	-18 (-0.4)	23	73	13.0 (1885)	260	18	Injection molding of complex Extruded shapes. FDA**
KB 2253	66.0	-18 (-0.4)	23	76	14.0 (2031)	200	17	Injection molding. O-rings, gaskets FDA**
KB 2255	66.0	-18 (-0.4)	23	76	13.0 (1885)	180	16	Injection O-rings, gaskets. Improved Compression Set than KB 2253. FDA**
KB 2400Z^	66.0	-18 (-0.4)	40	75	13.0 (1885)	250	23	Injection or compression molding of metal-bonded parts. 45 Mooney version is also available
KB 2402^	66.0	-18 (-0.4)	40	74	14.0 (2031)	250	18	Injection or compression molding of complex shapes. FDA** 45 Mooney version is also available
KB 2403^	66.0	-18 (-0.4)	40	77	14.0 (2031)	190	17	Compression, transfer or injection molding of O-rings. FDA** 45 Mooney version is also available
KB 2652	66.0	-18 (-0.4)	65	72	15.0 (2176)	225	14	High viscos. Compression Molding of seals
Bisphenol/Diamine Curable Terpolymer Raw Gums								
KR 325	68.0	-14 (7)	25	75	13.0 (1885)	230	25	Low viscosity terpolymer – General purpose – Better chemical resistance vs. copolymers
KR 370	68.0	-14 (7)	70	74	14.0 (2031)	230	25	High viscosity – General purpose – Better chemical resistance vs. copolymers. FDA**
KR 435	68.5	-13 (9)	30	73	13.0 (1885)	230	23	Medium viscosity terpolymer – General purpose – Better chemical resistance vs. copolymers. FDA**
KR 470	68.5	-13 (9)	65	73	14.0 (2031)	230	23	High viscosity terpolymer – General purpose – Better chemical resistance vs. copolymers. FDA**
Cure Incorporated Terpolymers								
KB 3300Z	68.0	-14 (7)	30	73	11.0 (1595)	280	27	Injection molding of oil seals, metal bonding
KB 4303	68.5	-13 (9)	30	75	12.0 (1740)	190	23	Injection molding of O-rings and gaskets. Better chemical resistance vs. copolymers
KB 4602	68.5	-13 (9)	60	75	13.0 (1885)	250	25	Compression molding of complex shapes
KB 4303	68.5	-13 (9)	60	75	14.0 (2031)	200	23	Compression molding of O-rings and gaskets
Low Temperature Bisphenol Curable								
KR 630	65.8	-19 (-2)	30	75	13.0 (1885)	170	18	Injection molding - General purpose - Improved low Temperature (TR1 O = -19°C)
KB 6253	65.8	-19 (-2)	25	72	13.0 (1885)	190	16	Compression, transfer or injection molding of O-rings- Improved low Temperature (TR10 = -19°C)
Peroxide Curable								
Terpolymers								
KR 320P	67.0	-15 (5)	20	70	19.0 (2756)	250	22	Injection molding - General purpose
KR 340P	67.0	-15 (5)	45	70	19.0 (2756)	280	22	Compression molding - General purpose
KR 520P	70.4	-5 (23)	20	76	20.0 (2901)	210	17	Injection molding - General purpose. Best chemical resistance among FKMs
KR 545P	70.4	-5 (23)	45	72	21.0 (3046)	210	17	Injection or compression molding - General purpose. Best chemical resistance among FKMs
KR 565P	70.4	-5 (23)	65	72	21.0 (3046)	180	20	Compression molding - General purpose. Best chemical resistance among FKMs
KR 525LP	70.4	-5 (23)	25	72	22.0 (3191)	285	25	For extrusion of multilayer hoses, when higher EB and/or better fatigue resistance are required

^ 45 Mooney version available*
* Press cure condition: 1 O min at 170°C (338°F), Post cure conditions: for bisphenol curable grades: (8+16) hours at 230°((446°F) / for peroxide curable grades: 4 hours at 230°C (446°F)
** Compliant to FDA§ 177,2600
*** 45 Mooney version available

Test Compound Recipes:

Bisphenol Curable Raw Gum

Raw Polymer	100		Remarks
Bisphenol AF	2	phr	>99.5
BenzylTriphenylPhosphonium Chloride	0.5	phr	>99.5
N-990 carbon black	30	phr	Thermax N-990
Magnesium oxide	3	phr	Kyowamag 1 50
Calcium hydroxide	6	phr	OMM-2

Bisphenol Cure incorporated Copolymers/Terpolymers

Precompound	100		Remarks
N-990 carbon black	30	phr	Thermax N-990
Magnesium oxide	3	phr	Kyowamag 1 50
Calcium hydroxide	6	phr	OMM-2

Peroxide curable Terpolymer raw gum

Peroxide curable raw gum	100		Remarks
N-990 carbon black	30	phr	Thermax N-990
Luperox 101XL45	3	phr	Arkema
TAIC (100%)	3	phr	>99.0 %
Zinc Oxide (ZnO)	5	phr	>99.0 %

Polvinylidene Fluoride

PVDF is a highly non-reactive, semi-crystalline, high purity thermoplastic fluoropolymer with a service temperature up to 150 °C. PVDF Finds applications in industries like Chemical Process Industries, Semiconductor, Wire and Cable, Automotive, Construction, Lithium Ion Battery and Solar Panel. It offers excellent resistance to abrasion, continuous UV exposure and harsh chemicals. Further, it has good burn characteristics, good thermal and mechanical performance and high di-electric strength.

Grades and Applications

Grades	Characteristics	Applications
Homopolymer		
1005	Low molecular weight High melt flow rate Easy to process	Injection molding Thin wall extrusion
1020	Medium molecular weight Stiff resin used for pipes	Extrusion Compression molding Transfer molding
1125	High viscosity Excellent chemical resistance Good Solubility in polar solvents Homopolymer Good thermal & mechanical performance UV resistant Easy processability	Membranes Coatings Batteries

Grades		1005	1020	1125	
Form	-	Pellet	Pellet	Powder	
Parameters	Unit	Value	Value	Value	Method
Physical Properties					
Specific gravity	-	1.76-1.79	1.76-1.79	1.76- 1.79	ASTM D792
Water absorption	%	< 0.04	< 0.04	< 0.04	ASTM D570
Rheological Properties					
Melt Mass Flow Rate	g/10min	19-35 (230°C, 3.8 kg load)	1.5-3 (230°C, 3.8 kg load)	2-6 (230°C, 12.5 kg load)	ASTM D1238
Mold Shrinkage - Flow	%	<3	<3	<3	Internal Method

Note: These are typical properties and not to be used for specification purpose

Grades		1005	1020	1125	
Form	-	Pellet	Pellet	Powder	
Parameters	Unit	Value	Value	Value	Method
Mechanical Properties					
Tensile modulus	MPa	1800-2500	1700-2300	1300 - 2300	ASTM D638
Tensile strength (Yield)	MPa	50-60	45-55	45-55	ASTM D638
Tensile strength (Break)	MPa	30-50	35-55	35 - 55	ASTM D638
Tensile elongation (Yield)	%	5.0-10.0	5.0-10.0	5.0-10.0	ASTM D638
Tensile elongation (Break)	%	> 50	> 50	> 50	ASTM D638
Taber abrasion resistance (1000 cycles, 1000 g, CS-17 wheel)	mg	5.0-10.0	5.0-10.0	5.0-9.0	ASTM D4060
Impact Properties					
Charpy notched impact strength (23 °C)	J/m	40-120	40-120	-	ASTM D6110
Notched izod impact strength (23 °C)	J/m	110	110	100	ASTM D256
Unnotched izod impact strength (23 °C)	J/m	1100	1100	1100	ASTM D256
Hardness Properties					
Durometer hardness (Shore D, 1 sec, 2.00 mm)	-	73-80	73-80	73-80	ASTM D2240
Thermal Properties					
Glass transition temperature	°C	-40	-40	-40	ASTM D4065
Melting temperature	°C	165-172	165-172	165-172	ASTM D3418
Deflection temperature under load (1.80 M Pa)	°C	110	105	105	ASTM D648
Deflection temperature under load (0.45 M Pa)	°C	130	135		ASTM D648
Vicat softening temperature	°C	140	145		ASTM D1525
CL TE - Flow (0 - 40 °C)	cm/cm/°C	1.4×10^{-4}	1.4×10^{-4}		ASTM D696
Electrical Properties					
Volume resistivity	Ohm-m	2×10^{12}	2×10^{12}	2×10^{12}	ASTM D257
Dielectric strength (23 °C, 1.00 mm)	kV/mm	20-25	20-25		ASTM D149
Dielectric constant (23 °C, 100 MHz - 1 00 Hz)	-	4.5 - 9.5	4.5 - 9.5	4.5 - 9.5	ASTM D150
Flammability Properties					
Oxygen index	%	44	44	44	ASTM D2863

Note: These are typical properties and not to be used for specification purpose

PTFE Micropowders

Fluoropolymer additives are ingredients that enable critical performance in the most demanding applications such as high temperature grease, rub resistant ink or coating, low wear plastic conveyer chain, high transparency food packaging film, or a television housing meeting stringent UL regulation.

T Series

It is a versatile range of PTFE micro-powders. The high dispersibility of these products confers the classic low coefficient of friction characteristics of PTFE, enhancing the properties of a variety of substrates including thermoplastics, thermosets, inks, paints, coatings and elastomers. T series is typically used at concentrations ranging from 1 to 20%, dependent on application, some of which include thermoplastic gears, floor varnishes, lithographic inks, dynamic seals, industrial liner coatings, polymer waxes and greases.

Properties

Grades	Bulk Density	Mean particle Size	Specific surface area	Melting point
T 201F	350	6	12	328
T 202F	400	6	12	328
T 203F	400	8	12	330
T 204F	350	4	12	328
T 205F	400	5	12	327
T 303	250	3	<3	325
T 304	250	4	<3	325
T 305	250	5	<3	325
T 308	200	8	<3	325
T 315F	400	15	<3	326
T 320F	400	20	<3	327
T 330F	400	30	<3	327

Note: These are typical properties and not to be used for specification purpose

Q Series
PTFE Aqueous Dispersion

It is an aqueous dispersion which consists of very small particles of PTFE resin, stabilised in water by non-ionic surfactant. It is formulated for use in aqueous media, but may also be used in a wide range of applications as an additive at concentration in the range 1-20%. Q series is used as an additive in polymers, coatings, paints, and lubricants. It may also be used in polymers to reduce friction and wear, as well as a drip-suppressant for flame retardant formulations.

Grades	Solid content	Surfactant content	pH of dispersion	Avg. particle size	Specific gravity
Q 930F	60	6	> 9.5	230	1.51

Note: These are typical properties and not to be used for specification purpose

R Series

Rheology Modifier

Our series of high molecular weight PTFE based additives designed to increase melt viscosity. As a drip suppressant additive, they are typically combined with flame retardants, generally in low enough concentrations that a polymer may be classified as "zero halogen". In addition, this product class is used to enhance melt strength of difficult to process polymers. R series is most widely used as a drip suppressant in flame retardant polymers for housings in business machines and household electrical appliances, as well as electronic components.

Properties

Grades	Bulk Density	Mean particle Size	Specific surface area	Melting point
R 740F	500	500	>7	342
R Bl OF	750	600	<3	342

Note: These are typical properties and not to be used for specification purpose

I-SAN

PTFE - SAN blend for optimal dispersion characteristics

Properties

Grades	PTFE Content (%)	Bulk Density (g/l)	Average particle size (µm)
I-SAN 50	50	450	500
I-SAN 60	60	450	500

Note: These are typical properties and not to be used for specification purpose

PPA (Polymer Processing Aids)

P Series

It is a range of fluoropolymer-based processing additives that can be incorporated in very low concentrations as extrusion processing aids- primarily in LLDPE, mLLDPE, and other polyolefins. It helps meet the ever-increasing demands of film performance without compromising extrusion capabilities.

Properties	Value				
Grades	P 401F	P 402F	P 501F	P 502F	P412F
Appearance	White free flowing powder				
Active component (%)	90	97	90	97	97
Anti-caking agent(%)	10	3	10	3	3
Bulk density (g/l)	900	700	900	700	700

***All our INOLUB® P Series grades are US FDA/EU FDA compliant**

Note: These are typical properties and not to be used for specification purpose

RESEARCH & **DEVELOPMENT**

GFRC

Gujarat Fluoropolymers Research Centre (GFRC) located at Dahej, India, is at the forefront of product & application development activities and serves as an essential bridge between market requirements and manufacturing operations. It focuses on offering genuine expertise and prompt customer support on Fluoropolymers.

GFRC, a team of research scientists & product specialists, is equipped with state-of-the-art application development laboratory including DCS operated pilot reactors. It has collaborated with renowned research institutes globally to work on the areas of new product development & sustainable manufacturing technologies. With this, the centre focuses on delivering customised Fluoropolymer products for novel applications and on developing manufacturing technologies which have minimal impact on the environment, thereby ensuring a sustainable future for the next generation.

Core functions of GFRC

Customer Support	Production Support	Quality Support
Technical service	Product development	Functional testing
Records and citations	Process optimisation	Certifications and regulatory compliances
Pre-sales documentation	Analytical support	Statistical analysis and control
Development of processing guidelines		Customer on-site audits
Application development		Customer feedback analysis
Product literature		Compliance to quality agreements

REGULATORY COMPLIANCE

GFL is committed to 'Green Chemistry' and offers environment-friendly products using sustainable technologies. Our extensive research and development in the field of Fluoropolymers enable us to comply with all major global compliances and regulations and facilitate our customers to choose greener products manufactured by sustainable technologies.

REACH - Registration, Evaluation, Authorisation and Restriction of Chemicals

WRAS - Water Regulation Advisory Scheme

EC 1935/2004 - European Commission

EC 10/2011 - European Commission

ROHS - Restriction of Hazardous Substances

FDA - Food and Drug Administration

USP Class VI - United States Pharmacopeia

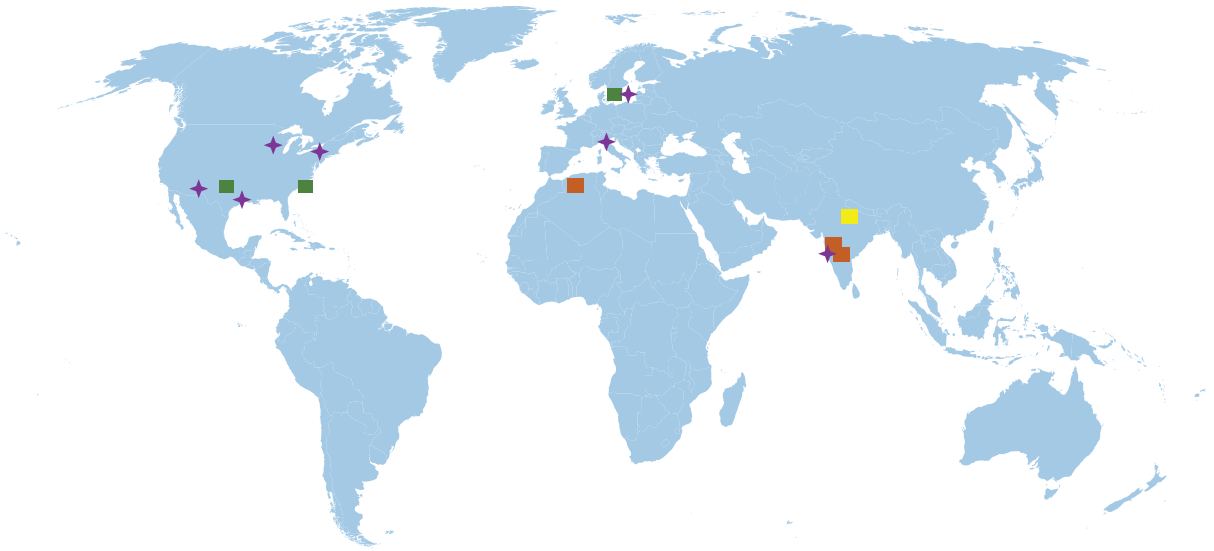
3A - Sanitary standards for design and fabrication of equipment

SVHC - Substances of Very High Concern

SUSTAINABILITY

GFL is committed to social, environmental and economic sustainability through responsible processes, practices and greener initiatives not only in our products but also in our principles. While consistent operating results and strong financial performance are a business imperative, treading towards the success keeping Health and Safety as paramount, remains one of our enduring values. The Company measures the impact of its business operations through 3 key pillars of Sustainability, namely People, Planet & Profit.

SA 8000:2014	ISO 37001:2016	ISO/IEC 27001:2013	ISO 26000:2010	ISO 20400:2017
Social Accountability System	Anti-bribery and Anti-Corruption Management System	Information Management Security System	Social Responsibility Management System	Sustainable Procurement System



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Texas, USA
New Jersey, USA
Arizona, USA
Indiana, USA
Hamburg, Germany
Brescia, Italy

Subsidiary
Hamburg, Germany
Texas, USA

Manufacturing
Dahej, Gujarat, India
Ranjitnagar, Gujarat, India
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