Common Base Polymer Families

Chemical Name	Abbreviation	Temperature Range	Characteristics
Acrylonitrile-Butadiene (Nitrile, Buna-N)	NBR	-70°F to 275°F (-57°C to 135°C)	Most widely used polymer in the seal industry. Excellent resistance to petroleum-based fluids, good balance of physical properties and wide temperature range.
Isobutylene-Isoprene (Butyl)	IIR	-75°F to 250°F (-59°C to 121°C)	Low permeability rate and good electrical properties. Often used to seal low temperature vacuum system applications.
Chloroprene Rubber (Neoprene)	CR	-60°F to 250°F (-51°C to 121°C)	Good general purpose polymer. Exhibits good ozone, aging and chemical resistance—primarily used in refrigerants.
Ethylene Acrylate (Vamac®)	AEM	-40°F to 350°F (-40°C to 177°C)	Similar to polyacrylate with improved low temperature performance, swells more in oil than polyacrylate.
Ethylene Propylene Rubber	EPDM, EPM, EP, EPR	-65°F to 300°F (-54°C to 149°C)	Widely specified seal material—excellent resistance to alcohols, ketones, steam, brake fluid, Skydrol® and other phosphate ester based hydraulic fluids.
Fluorocarbon	FKM, FPM	-55°F to 400°F (-48°C to 204°C)	Second most popular seal material after nitrile. Wide-spectrum chemical resistance and broad temperature range. Some specialty FKM compounds have low temperature static sealing to -40°F (-40°C). Commonly used in fuels.
Fluorosilicone	FVMQ	-100°F to 350°F (-73°C to 177°C)	Combines temperature range of silicone with good resistance to petroleum-based fuels and lubricants. Applications with high heat that are combined with potential exposure to petroleum oils and/or hydrocarbon fuels.
Hifluor™	FKM	-15°F to 400°F (-26°C to 204°C)	Parker's trade name for a group of intermediate technology materials that bridge the gap between fluorocarbon and perfluoroelastomer.
Hydrogenated Nitrile	HNBR, HSN	-40°F to 300°F (-40°C to 149°C)	Similar to nitrile with improved high temperature capabilities and ozone resistance. Excellent resistance to petroleum-based fluids.
Liquid Silicone Rubber	LSR, LIM	-175°F to 450°F (-115°C to 232°C)	LSR is mixed as a two-part liquid and is pumped into an injection tool. The material's low viscosity prior to vulcanization requires a lower mold pressure and shorter vulcanization times compared to conventional injection molding.
Polyamide (Nylon 6, Nylon 6, 6)	PA 6	-65°F to 250°F (-54°C to 121°C)	Well known family of plastics used as anti-extrusion devices and retainers. Resistant to a variety of petroleum and phosphate ester hydraulic fluids.
Perfluoroelastomer	FFKM, FFPM	5°F to 608°F (-15°C to 320°C)	Parker's Parofluor™ and Parofluor ULTRA™ materials combine the chemical resistance of PTFE with the elastic properties of fluorocarbon.
Polyacrylate	ACM	-5°F to 350°F (-21°C to 177°C)	Outstanding resistance to petroleum-based fuels and oils. Good resistance to oxidation, ozone and sunlight—resists flex cracking.
Polyetheretherketone	PEEK	-80°F to 450°F (-62°C to 232°C)	High-temperature-resistant plastic used where extrusion resistance, high-temperature capability and a broad resistance to chemical environments is needed. Available in unmodified or glass-filled formulations.
Polytetrafluoroethylene	PTFE	-450°F to 550°F (-268°C to 288°C)	Stable polymer with extremely good resistance to almost all known chemicals. Parker's proprietary polytetrafluoroethylene material is called Polon®.
Polyurethane	AU, EU	-40°F to 200°F (-40°C to 93°C)	Tough, abrasion and wear-resistant material, well suited for hydraulic and pneumatic rod or piston applications. Parker's proprietary materials, Molythane®, Resilon® and Ultrathan® deliver the best overall sealing performance of all commercial polyurethane formulations. Ultra clean medical and optical grades are also available.
Silicone	VMQ, PVMQ, PMQ	-175°F to 450°F (-115°C to 232°C)	Exceptional heat and compression set resistance, good insulating properties, tends to be physiologically neutral and is useful in wide temperature extremes. Relatively poor tensile strength, tear and abrasion resistance.
Tetrafluoroethylene-Propylene (Aflas®)	TFE/P	15°F to 450°F (-9°C to 232°C)	High-temperature stability, resistance to broad range of chemicals, including bases, amines, sour gas, hydrocarbon blends and brake fluid. Its poor low temperature flexibility and compression set resistance has limited a more widespread use of the material.

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