

Elastomers for Oil & Gas Sealing

No. 5267B1/USA

Parker engineered materials are specifically formulated for Oil & Gas service demands

Material design for harsh service demands

Parker Hannifin's EPS Division, the leading developer of engineered polymer system solutions, offers a large selection of elastomeric and thermoplastic materials that are specifically formulated to meet the demands of oil and gas applications. Parker's materials are available in a wide range of both thermoplastic and elastomeric materials. These materials, coupled with our experience in providing a broad range of engineered shapes, are proven solutions for demanding oil and gas service.

Parofluor™ Materials

The newest materials developed for oil, gas, and chemical processing environments are Parker's Parofluor™ perfluoroelastomers. These compounds exhibit chemical resistance and thermal stability similar to PTFE, yet maintain the essential properties of resilience and memory, making them ideal for use as high-performance elastomer seals. Parofluor™ materials perform in the most aggressive chemical media, including H₂S, CO₂, and hydrocarbons.

Explosive Decompression

A common challenge in subsea and land-based oil and gas applications is explosive decompression or "ED." This phenomenon occurs when system pressure drops rapidly and the gases that have permeated into the elastomer suddenly expand – causing materials to blister or split. With any material you have to be aware of the blow down rate to avoid ED; however Parker compounds V1238, V1041 and N4007 exhibit superior ED resistance, and are ideal for use in applications where gas pressure dramatically fluctuates.

Exceptional Performance in Widely Varied Media

To provide exceptional sealing performance in energy oil and gas applications, a material must be resistant to a broad range of media. Parker's compounds V8588, V1238, V1041, N4007 along with UltraCOMP™ and PTFE have been evaluated using NACE Standard TM0187-98 criteria. Parker's N4007, V1041, and V1238 have been certified to Norsok M710 – retaining their superior physical properties after exposure to aggressive media.

Complete Solution:

Parker's PTFE or UltraComp™ provides a complete sealing system against heat, pressure, and chemical attack. Combinations of Parker's elastomers and thermoplastic materials have proven to be the best sealing system solution when conditions are extreme.



Key Features of Parker's Specialty Oil & Gas Materials

Material	Feature
E0962A90	Geothermal EPDM, steam to 500°F.
N4007A90	Low compression set superior extrusion and abrasion resistance. It is certified to Norsok M710 and passes NACE TM0187-98 Standard.
V1041A85	Good in H ₂ S and ED resistant. Certified to Norsok M710 and passes NACE TM0187-98 Standard
V1238A95	Superior extrusion and ED resistance fluorocarbon. Good H ₂ S resistance. Certified to Norsok M710.
V8588A90	Perfluorinated elastomer has high temperature resistance, broad chemical compatibility and explosive decompression resistance.
Nitroxile™	High wearing high extrusion resistance materials with good chemical resistance and low compression set. N4263A90 and N4274A85.
PTFE	Parker's PTFE blends can be formulated for high wear and extrusion resistance. These can be formulated to meet specific applications.
UltraCOMP™	Engineered thermoplastic compounds. Formulated for high temperature, pressure and chemical environments, they have excellent fatigue resistance and ED resistant. Often used as bearing and backup devices.
UHMWPE	High wearing plastic for use in abrasive media, excellent in H ₂ O based media.
Resilon™	Highest performing TPU's on the market today, having low compression set, excellent rebound, and superior resistance to hydrolysis when compared to other TPUs.
MolyGard™	Thermoplastic material, super hard. With a hardness of 120 Rockwell it has excellent extrusion resistance and load bearing abilities.
Molythane™	General purpose TPU used in petroleum based fluids, developed for high extrusion and wear resistance.
PolyMyte™	A 60 shore D plastic-alloy material for high pressures and temperatures to 275°F in petroleum based fluids, and 180°F in H ₂ O based fluids.

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NITRILES (Buna-N, NBR)	Temp. Min	Max
N4400A75 75 Shore A durometer peroxide-cured nitrile. Excellent compression set resistance. Applications: Petroleum lubricants, seawater and diesel fuel.	-35°F	+275°F
N4180A80 80 Shore A durometer, general purpose nitrile good compression set. Applications: Petroleum lubricants, seawater.	-30°F	+275°F
N9643A90 90 Shore A durometer packer element - meets API 11D1	-20°F	+275°F
N9589A80 80 Shore A durometer packer element - meets API 11D1	-20°F	+275°F
HYDROGENATED NITRILES (HSN, HNBR)		
N4031A85 (EPS) / KA183A85 (ORD) Excellent low temperature capability. Extrusion resistant. ED resistance. Passes NACE TM0 187-98 Standard.	-40°F	+300°F
N4025A80 80 Shore A durometer abrasion resistant HNBR developed for low temperature resistance, excellent compression set resistance. Applications: High abrasion, high temperature resistance coupled with low temperature resistance.	-40°F	+300°F
N4007A90 90 Shore A durometer HNBR. High tensile. Excellent abrasion resistance. Applications: High wearing and pressure applications.	-25°F	+300°F
N4288A85 85 Shore A durometer; Excellent abrasion resistance. Good compression set. Good in Flex Fuels MTBE.	-25°F	+300°F
ETHYLENE PROPYLENE (EPDM, EPR)		
E0962A90 90 Shore A durometer; developed for steam service. Geothermal, high temperature, high pressure steam (intermittent to 550°F), resistant to CO ₂ , H ₂ S, methanol, glycols and explosive decompression.	-60°F	+500°F
NITROXILE™		
N4263A90 90 Shore A Durometer Nitroxile. Excellent abrasion resistance. Applications: Petroleum lubricants, seawater and diesel fuel.	-20°F	+275°F
N4257A80 80 Shore A durometer Nitroxile. Internally lubricated. Lower friction and excellent abrasion resistance. Applications: Petroleum lubricants, seawater, and diesel fuel.	-20°F	+275°F
N4274A85 85 Shore A durometer Nitroxile. Extreme low friction, internal lubricant for lower friction and excellent abrasion resistance. Applications: Petroleum lubricants, seawater, and diesel fuel.	-20°F	+275°F
FLUOROCARBON (FKM)		
V4205A75 75 Shore A durometer, general-purpose fluorocarbon. Excellent compression set resistance. Applications: High temperature, high pressure petroleum oils & fuels.	-15°F	+400°F
V1238A95 95 Shore A durometer fluorocarbon. Developed for maximum extrusion resistance, good compression set, ED resistant. NORSOK M710. Applications: High temperature, high pressure and H ₂ S resistance.	-15°F	+400°F
V4208A90 90 Shore A durometer general purpose fluorocarbon. Excellent compression set resistance. Applications: High temperature, high pressure petroleum oils & fuels.	-15°F	+400°F
V4266A95 95 Shore A durometer general purpose fluorocarbon. Applications: Wear and extrusion resistance.	-15°F	+400°F
PERFLUORINATED ELASTOMERS (FFKM)		
V8545A75 (FFKM) 75 Shore A durometer high temp resistant perfluorinated elastomer. Good compression set resistance, extreme chemical resistance and low leachables. Extreme temperatures, chemical mixtures, high concentration H ₂ S, amines, steam, polar fluids and solvents.	-15°F	+550°F
V8588A90 Parofluor™ (FFKM) 90 Shore A durometer high temperature resistant perfluorinated elastomer. Extrusion and explosive decompression resistant. High temp/high pressure H ₂ S, CO ₂ , amines, polar fluids and solvents.	-15°F	+550°F
HIGHLY FLUORINATED ELASTOMERS		
V3819A75 (Hifluor™) 75 Shore A durometer highly fluorinated material. Lower temperature range, cost-effective alternative to perfluorinated materials. Improved compression set and abrasion resistance. Resistant to aggressive chemicals, ketones, amines, acids and bases, polar fluids.	-15°F	+400°F
V8534A90 (Hifluor™) 90 Shore A durometer highly fluorinated material. Extrusion resistant version of V3819A75. High pressure with aggressive chemicals.	-15°F	+400°F

AFLAS TFE	Temp. Min	Max
V4461A90 90 Shore A Durometer material. Improved compression set resistance. Applications: Amines, H ₂ S, steam, high temperature.	-15°F	+450°F
V1041A85 85 Shore A Durometer material. Improved compression set resistance. Applications: Amines, H ₂ S, steam, high temperature. Certified to NORSOK M710. Passes NACE TM0 187-98 Standard.	-15°F	+450°F
CHLOROPRENE (Neoprene, CR)		
C4107A75 75 Shore A Durometer, excellent oxidation resistance. Applications: Limited in liquefied petroleum gasses (LPG), ammonia (amines) and many freons. Moderate oil resistance.	-45°F	+300°F
ELASTO-PLASTIC MATERIALS		
Resilon™ HT P4300A90 High performance polyurethane designed for better physical properties. Improved compression set and rebound properties, gives increased sealing capabilities.	-65°F	+275°F
Resilon WR P4301A90 High performance polyurethane similar to P4300 with resistance to water and water-glycol. Provides resistance to water attack while retaining hydraulic fluid compatibility.	-65°F	+275°F
Resilon LF 4306A90 High performance polyurethane similar to P4300 with lower friction, reduced heat build-up and reduced wear.	-65°F	+275°F
Polyurethane P4700A90 Superior polyurethane designed for enhanced physical properties. Improved compression set and rebound properties, gives increased sealing capabilities.	-50°F	+225°F
Molythane™ P4615A90 Improved blend of polyurethane compounded for high extrusion resistance. Excellent wear and abrasion resistance.	-65°F	+200°F
PLASTIC ALLOY MATERIALS		
PolyMyte™ Z4651 High tear strength, abrasion and extrusion resistance. Excellent resistance to petroleum fluids, many phosphate ester fluids, some chlorinated hydraulic fluids, up to 180°F in water, oxygen, common solvents, dilute bases and mineral acids. Good resistance to hostile environments.	-65°F	+275°F
MolyGard™ W4650 Proprietary compound of filled nylon material for load bearing and anti-extrusion	-65°F	+250°F
Nylatron™ W4655 Nylatron is used for abrasion resistant anti-extrusion devices, bearings or engineered parts. Resistant to most petroleum based fluids. May be used with phosphate ester hydraulic fluids, ketones, alkalis and weak acids.	-65°F	+250°F
PTFE		
0100 Virgin PTFE Best for static applications. Good in Vacuum, low gas permeability. Excellent in cryogenics.	-450°F	+425°F
0204 Glass and Moly filled PTFE. Increases wear resistance in high speed reciprocating service and on harden shafts in well lubricated rotary applications.	-36°F	+550°F
0201 Glass filled PTFE used for high wear resistance, and has excellent performance in seat and stem packings.	-36°F	+550°F
0502 Carbon filled PTFE for dynamic applications. Increased wear resistance and has low abrasion.	-36°F	+550°F
0901 UHMWPE High wearing plastic used in abrasive media. Excellent in H ₂ O based media.	-36°F	+180°F
UltraCOMP™ ENGINEERED THERMOPLASTICS		
UltraCOMP HTP W4685, CGT W4738 Used for replacing brass, bronze or other metallic members in sealing and back-up systems. Non filled UltraCOMP (Parker brand P.E.E.K.), and filled blends (Carbon, Graphite, PTFE) used for replacing brass, bronze or other metallic devices in sealing back-up systems.	-65°F	+500°F

Contact us. Call Parker at (801) 972-3000 for technical assistance and additional information.