



# Services

## ENGINEERING ASSISTANCE



**Design Consultation**



**Value/Reverse Engineering**



**Material Selection**



**Computer-Aided Design**



**Internal and External Lubricants**



**On-Site Technical Support**

## OPERATIONS ASSISTANCE



**Kitting**



**Sub-Assembly**



**Clean Room**



**Material Traceability**



**PPAP Approvals**



**Bin Stocking**

## PURCHASING ASSISTANCE



**Vendor Consolidation**



**Alternative Materials**



**Vendor-Managed Inventory**



**Cost Reduction**



**Global Sourcing**



**Shipment Consolidation**

## CONVERSION



### Gasket Conversion

- No Tooling or Set-up Fees
- Foam
- Rubber
- Diaphragm Materials
- Compressed Non-Asbestos
- High Performance Materials
- PSA



### Machined Plastics

- PTFE Blends
- Engineered Plastics (PEEK, PPS, PA, TFM, etc.)
- Spring-energized Seals
- Shaft Seals



### Splicing / Vulcanizing

- No Tooling or Set-up Fees
- O-Rings
- Large Diameter Seals
- Smallest Splicing Capability 6.5" ID

## INDUSTRIES

**Aerospace**

**Oil & Gas**

**Medical**

**Fluid Power**

**General Industrial**

**Water & Wastewater**

**Automotive**

**Filtration**

**HVAC**

**Pool & Spa**

**Agriculture**

**Food & Beverage**

# Products & Materials



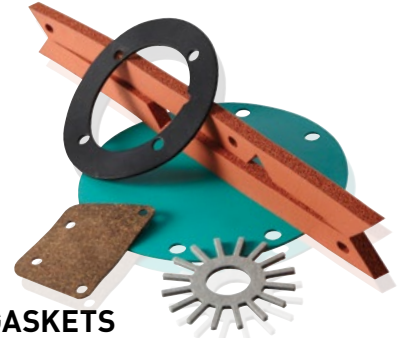
## O-RINGS

Common O-Rings are readily available from All Seals in many sizes and materials for multiple uses. We can even customize the size and material to precisely fit your application.



## CUSTOM MOLDED RUBBER

When the need is for non-seal type molded parts, All Seals can help. For bumpers, caps, gaskets, bellows, handles, washers, etc., All Seals delivers the solution.



## GASKETS

Gaskets come in all shapes and sizes. All Seals can supply gaskets in a variety of materials to cover all of your sealing needs. With either small sample runs or high production usage, we have you covered.



## MECHANICAL SEALS

High performance is a must for mechanical seals given the conditions they operate under. An extensive selection, stocked for same day shipment is also crucial to your needs. Count on us for the best quality and selection.



## HYDRAULIC SEALS

Rod seals, piston seals, wipers, wear guides, etc. We have the solution to meet your hydraulic needs! From standard to complex multi-faceted custom designs, we've got you covered.



## MACHINED PLASTICS

We have options for applications requiring special seals or custom shapes, including designs for parts produced from machined plastics, like PTFE, PEEK, PA, POM, ACETAL, PAI, PPS, and more.



## RADIAL SHAFT SEALS

All Seals can cover all your rotary sealing needs with our extensive range of radial seals in many different styles, sizes and materials. With years of experience in the industry, we can make recommendations for all of your rotary applications.



## RUBBER-TO-METAL BONDED

High pressure environments at times call for more than just rubber. All Seals carries standard and metric rubber-to-metal seals, such as the NAS1523 mil-spec thread-seal line. We can also help engineer a custom bonded seal for your unique application.



## ENGINEERED COMPOUNDS

All Seals offers a wide variety of certified and uniquely developed compounds. UL approved, FDA compliant, NSF certified, WRAS certified and 3-A Sanitary O-Rings and custom molded rubber products are all available, just to name a few.



## STANDARD COMPOUNDS

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### AFLAS® (TFE/P, FEPM)

**OPERATING TEMPERATURE\*:** +15° to +400° F

**COMPOSITION:** Medium density copolymer of tetrafluoroethylene and propylene.

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### BUTYL RUBBER (IIR)

**OPERATING TEMPERATURE\*:** -65° to +250° F

**COMPOSITION:** Medium density copolymer of isobutylene and a small amount of isoprene.

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### CARBOXYLATED NITRILE (XNBR)

**OPERATING TEMPERATURE\*:** -10° to +250° F

**COMPOSITION:** Medium density terpolymer of acrylonitrile, butadiene, and a diene monomer containing carboxylic acid.

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### CHLOROPRENE RUBBER (CR, polychloroprene, Neoprene)

**OPERATING TEMPERATURE\*:** -40° to +225° F

**COMPOSITION:** Produced from the chloroprene monomer, a combination of chlorine and butadiene. Medium density.

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### ETHYLENE ACRYLIC RUBBER (AEM, Vamac®)

**OPERATING TEMPERATURE\*:** -30° to +300° F

**COMPOSITION:** Medium density copolymer of ethylene and methyl acrylate. May also contain a small amount of a third monomer.

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### ETHYLENE PROPYLENE RUBBER (EPDM, EPT, Nordel IP®, Keltan®)

**OPERATING TEMPERATURE\*:** -60° to +250° F

**COMPOSITION:** Low density terpolymer of ethylene, propylene, and a small amount of a diene.

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### FLUOROCARBON RUBBER (FKM, FPM, Viton®, Dai-El®, Tecnoflon®)

**OPERATING TEMPERATURE\*:** +15° to +400° F

**COMPOSITION:** High density copolymer of vinylidene and hexafluoropropylene.

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### FLUROSILICONE RUBBER (FVMQ, Silastic FSR®, FSE®)

**OPERATING TEMPERATURE\*:** -70° to +400° F

**COMPOSITION:** Low density fluorinated silicone rubber.

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### HIGHLY SATURATED NITRILE (HNBR, HSN, NBM, Therban®, Zetpol®)

**OPERATING TEMPERATURE\*:** -25° to +300° F

**COMPOSITION:** Formed by hydrogenating the nitrile copolymer of butadiene and acrylonitrile. Medium density.

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### NATURAL RUBBER (NR, Hevea)

**OPERATING TEMPERATURE\*:** -60° to +225° F

**COMPOSITION:** Coagulated, dried rubber derived from the latex of the Hevea Brasiliensis tree. Low to medium density.

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### NITRILE RUBBER (NBR, Buna N, Paracril®, Nipol®)

**OPERATING TEMPERATURE\*:** -30° to +250° F

**COMPOSITION:** Medium density copolymer of butadiene and acrylonitrile.

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### PERFLOUROELASTOMER (FFKM, Kalrez®, Chemraz®)

**OPERATING TEMPERATURE\*:** -10° to +500° F

**COMPOSITION:** High density copolymer of tetrafluoroethylene and a perfluorinated ether.

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### POLYACRYLATE RUBBER (ACM, polyacrylic rubber, Hycar®)

**OPERATING TEMPERATURE\*:** -0° to +350° F

**COMPOSITION:** Medium density acrylic ester copolymer.

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### POLYURETHANE (AU, EU, PU, Millathane®)

**OPERATING TEMPERATURE\*:** -40° to +180° F

**COMPOSITION:** Low to medium density polyurethane diisocyanate.

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### PTFE (Teflon®, Polyflon®)

**OPERATING TEMPERATURE\*:** -300° to +500° F

**COMPOSITION:** Fluorocarbon resin generically known as polytetrafluoroethylene.

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### SILICONE RUBBER (VMQ, PSilastic HCR®, Elastosil®)

**OPERATING TEMPERATURE\*:** -65° to +400° F

**COMPOSITION:** Medium density inorganic rubber consisting primarily of polymethylsiloxane and variations.

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### STYRENE-BUTADIENE RUBBER (SBR, GRS, Buna-S)

**OPERATING TEMPERATURE\*:** -50° to +225° F

**COMPOSITION:** Low density copolymer of styrene and butadiene

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### VITON™ ETP (Viton™ Extreme™)

**OPERATING TEMPERATURE\*:** -10° to +400° F

**COMPOSITION:** High density terpolymer of ethylene, tetrafluoroethylene, and perfluoromethyl vinyl ether.

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# MATERIAL PROPERTIES CHART

MATERIAL NAME ASTM D1418 DESIGNATION	ASTM D 2000, SAE J200 Type, Class	Relative Cost	General Temperature Range (F)	Abrasion Resistance	Acid Resistance	Base Resistance	Chemical Resistance	Cold Resistance	Dynamic Properties	Flame Resistance	Gas Impermeability	Heat Resistance	Oil Resistance	Ozone Resistance	Set Resistance	Steam Resistance	Tear Resistance	Tensile Strength	Water Resistance	Weather Resistance
Aflas® – FEPM	HK	High	15 to 400	G	E	E	E	P	F	E	G	E	E	E	G	G	P-F	F-G	G	E
Butyl Rubber – IIR	AA, BA	Med	-65 to 250	F-G	G	G-E	E	G	F	P	E	F	P	G-E	F-G	G	G	G	G	E
Chloroprene (Neoprene®) – CR	BC, BE	Med	-40 to 225	G-E	F-G	G-E	F-G	G	F	G-E	G	G	F-G	G-E	F	P	F-G	G	E	G
Chlorosulfonated Polyethylene (Hypalon®) – CSM	CE	Med	-20 to 250	G-E	G	G-E	E	F-G	F	G	G	G	F	E	F	F	G	F	F-G	E
Epichlorohydrin – CO, ECO	CH	Med	-55 to 275	F-G	F-G	G-E	G	G-E	G	F	G-E	F-G	E	G-E	P-F	G	G	G	G	G-E
Ethylene Acrylic (Vamac®) – AEM	EE	Med	-30 to 300	G	F	P-G	F-G	G	F	P	E	G-E	F	E	G	P	F	G	G	E
Ethylene Propylene – EPM, EPDM	AA, BA, CA, DA	Low	-60 to 250	G-E	E	E	E	G-E	G-E	P	G	G-E	P	E	G-E	E	G-E	G-E	E	E
Fluorocarbon – FKM	HK	High	-15 to 400	G	E	G	E	P	G	E	G	E	E	E	G-E	P	F	G-E	G	E
Fluorosilicone – FVMQ	FK	High	-70 to 400	P	G	G	G	E	P	E	P	E	G	E	G-E	F-G	P	P	E	E
Hydrogenated Nitrile – HNBR	DH	High	-25 to 300	E	G	G	F-G	G	E	P	G	G-E	E	G-E	G-E	G	E	E	E	G-E
Nitrile – NBR, XNBR	BF, BG, BK, CH	Low	-30 to 250	G-E	F	F	F-G	G	G-E	P	G	G	E	P	G-E	F	F-G	G-E	G-E	P-F
Perfluoroelastomer – FFKM	KK	V High	-10 to 500	P	E	E	E	P	F	E	G	E	E	E	P	G-E	P-F	F-G	G-E	E
Polyacrylate – ACM	DF, DH	Med	0 to 350	G	P	P	P	P	F	P	E	G	E	G-E	F	P	F-G	F	P	E
Polytetrafluoroethylene (Teflon®) – PTFE	None	High	-300 to 500	P-G	E	E	E	E	P	E	F	E	E	E	P	E	E	E	E	E
Polyurethane – AU, EU	BG	High	-40 to 180	E	P	F	F	G	E	P	G	P	G	E	F	P	G-E	E	P/G	E
Silicone – MQ, PMQ, VMQ, PVMQ	FC, FE, GE	Med	-65 to 400	P	F-G	F-G	F	E	P	G	P	E	F	E	G-E	F-G	P	P	E	E
Styrene Butadiene – SBR	AA, BA	Low	-50 to 225	E	F	F	F	G	G-E	P	F	F	P	P	G	F	F-G	G-E	G-E	F
Viton ETP – FEPM	HK	High	-10 to 400	F	E	E	E	P	F	E	F	E	E	E	P	F-G	F	G	E	G

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\*Excellent, good, fair and poor are intended to serve as general guidelines only. Actual testing in the application environment is always recommended.

**E = Excellent    G = Good    F = Fair    P = Poor**

## CERTIFICATIONS



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