Eliminate Downtime in the Wind Power Industry

System reliability is essential to the wind power industry. Turbine downtime reduces power productivity and increases operation and maintenance costs. To eliminate these obstacles, Parker's O-Ring Division offers a unique combination of experience, innovation and support to accommodate customer sealing needs.

Parker materials provide compatibility in outdoor environments as well as various service oils. With a multipurpose laboratory, we offer advanced material analysis, failure mode analysis, and new product research and development capabilities.

For more information on Parker's wind power sealing capabilities, contact Alice Cato, Market Development Engineer, at 859-335-5109 or acato@parker.com.

Parker O-Ring Division offers:

- Unlimited size capability
- Full range of industry-applicable materials in various polymer families
- Exceptional lab capability
- State-of-the-art mixing facility
- Wordwide manufacturing capability
- Global distribution channels
- Complimentary application engineering and design support
- Competitive lead time

Key Materials and Capabilities

Compound	Recommended for	Not recommended for
NBR	Petroleum oils, water (up to 212°F), sale and alkali solutions, and weak acids.	Phosphate esters, strong acids, glycols, ozone, aging, weather and polar solvents.
HNBR	Petroleum based oils, transmission fluid, grease, water/glycol/steam, HFA, HFB, and HFC fluids, ozone, aging and weather resistance.	Polar solvents (ketones and esters), strong acids and chlorinated hydrocarbons.
FKM	Petroleum, mineral, and vegetable oils, silicone fluids, aromatic hydrocarbons (benzene, toluene), chlorinated hydrocarbons, high vacuum, ozone, aging and weather resistance.	Hot water and steam, amines, ketones and low molecular weight esters and ethers.
VMQ	Dry heat, some petroleum oils, moderate water resistance, fire resistant hydraulic fluids (HFD-R & HFD-S), ozone, aging, weather resistance and low temperature.	Ketones, acids, silicone oils and dynamic applications.

Compound Comparison	NBR	HNBR	FKM	VMQ
Basic Properties	N0674-70	N1173-70	V1164-75	S0604-75
Hardness, Shore A, points	71	74	75	67
Tensile strength, psi	2546	3306	1913	889
Elongation, %	331	206	185	160
Heat resistance (70 hrs @)	212°F	302°F	482°F	437°F
Hardness chg. pts.	+6	+3	0	+3
Tensile strength change, %	+6.3	-4	-6	-0.3
Elongation change, %	-30.2	-18	+4	-28.1
Compression set (22 hrs. @)	212°F	302°F	347°F	347°F
% of original deflection	12.6	18.4	11.5	15.0
ASTM #1 oil, (70 hrs. @)	212°F	302°F	n/a*	302°F
Hardness change, pts.	+3	-1	n/a*	-5
Tensile strength change, %	+5.5	+11	n/a*	-7.9
Elongation change, %	-15.1	+10	n/a*	-12.5
Volume change, %	-2.3	+2	n/a*	+3.2
ASTM#3 oil, (70 hrs. @)	212°F	302°F	302°F	300°F
Hardness change, pts.	-7	-9	n/a*	-17
Tensile strength change, %	+2.9	-13	n/a*	n/a
Elongation change, %	-7.9	-11	n/a*	n/a
Volume change, %	+14	+19	+2	+32
Temperature range	-30 to 250°F	-25 to 300°F	-15 to 400°F	-65 to 450°F

*FKM materials are seldom tested in ASTM#1/ASTM#3 (IRM 903) oil due to universal minimal effect.