VP309-80 and VP316-90

Base Resistant Fluorocarbon (FKM)



Innovative Elastomeric Technology for Critical Environments

Finding a material which is resistant to a broad range of fluids, offers decent low temperature flexibility, and is cost effective, can be one of the most common challenges found in the Oil and Gas industry today. Parker's Base Resistant Fluorocarbon (BRE-FKM) compounds, VP309-80 and VP316-90, are technologies that are able to withstand exposure to hydrocarbons, acids, solvents, high temperature water, completion brines, control fluids and amines while exhibiting better low temperature flexibility than AFLAS™ at a price point under Perfluoroelastomer. This excellent balance of characteristics paired with Parker's ability to manufacture into various form factors such as O-rings, custom molded shapes, packer elements and bonded parts, makes Parker's VP309-80 and VP316-90 an ideal solution to Oil and Gas sealing challenges.

Contact Information:

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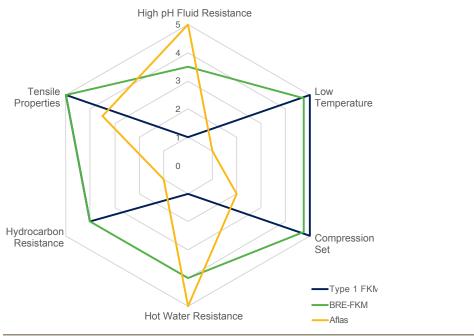
Product Features:

- 80 and 90 Shore A hardness
- Operating Temperature Range from -10°F to 400°F
- Very Good Compression Set Resistance
- Sour Gas Resistant (up to 20% H₂S per NACE TM0187)

- RGD Resistant per ISO 23936-2
- Broad range of chemical resistance (High pH fluids, amines, completion brines, acids, and hydrocarbons)

Specifications

Hardness, Shore A, pts ASTM D2240 85 92 Tensile Strength, psi ASTM D1414 3371 2624 Utimate Elongation, % ASTM D1414 284 160 Modulus at 50% Elongation, psi ASTM D1414 284 160 Modulus at 100% Elongation, psi ASTM D1414 1215 2019 Specific Gravity ASTM D297 1.74 1.64 Tear Strength, Die C, ppi ASTM D624 226 248 To rs, @ 392'F ASTM D7426 -14 -14 Compression Set To rs, @ 392'F ASTM D395 11 15 Floid Bmersion, Distilled Water, 168 hrs. @ 392'F -1 15 Hardness Change, Shore A, pts. ASTM D471 -1 -1 Volume Change, % -1 -1 -1 Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302'F -1 -1 Hardness Change, Shore A, pts. ASTM D471 -1 -1 Volume Change, % -1 -1 -1 -1 Hardness Change, Shore A, pts. ASTM D471 0 -1 Volume Change,	Property	Test Method	VP309-80	VP316-90
Tensile Strength, psi ASTM D1414 3371 2624 Ultimate Elongation, % ASTM D1414 264 160 Modulus at 50% Elongation, psi ASTM D1414 651 1274 Modulus at 100% Elongation, psi ASTM D1414 1215 2019 Specific Gravity ASTM D297 1.74 1.64 Tear Strength, Die C, ppi ASTM D624 226 248 Tg, °C ASTM D7426 -14 -14 Compression Set To hrs. @ 392°F ASTM D395 11 15 To hrs. @ 392°F ASTM D471 164 23 Fluid Immersion, Distilled Water, 168 hrs. @ 392°F -1 -1 Volume Change, % -1 -1 <td>Original Physical Properties</td> <td></td> <td></td> <td></td>	Original Physical Properties			
Utimate Elongation, % ASTM D1414 284 160 Modulus at 50% Elongation, psi ASTM D1414 651 1274 Modulus at 100% Elongation, psi ASTM D1414 1215 2019 Specific Gravity ASTM D1297 1.74 1.64 Tear Strength, Die C, ppi ASTM D624 226 248 Tg, °C ASTM D7426 -14 -14 Compression Set - - - - To hrs. @ 392°F Method B 16 23 - Fluid Immersion, Distilled Water, 168 hrs. @ 392°F -	Hardness, Shore A, pts	ASTM D2240	85	92
Modulus at 50% Eiongation, psi ASTM D1414 651 1274 Modulus at 100% Eiongation, psi ASTM D1414 1215 2019 Specific Gravity ASTM D297 1.74 1.64 Tear Strength, Die C, ppi ASTM D624 226 248 Tg, °C ASTM D7426 -14 -14 Compression Set To hrs. @ 392°F ASTM D395 11 15 Fluid Immersion, Distilled Water, 168 hrs. @ 392°F ASTM D471 -1 Hardness Change, Shore A, pts. ASTM D471 -1 Volume Change, % -1 -1 Fluid Immersion, Not 2 Diesel, 168 hrs. @ 302°F -1 -1 Hardness Change, Shore A, pts. ASTM D471 -1 Volume Change, % -1 -1 Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°F -1 -1 Hardness Change, Shore A, pts. ASTM D471 -1 Volume Change, % -1 -1 -1 Fluid Immersion, IRM 903, 168 hrs. @ 302°F -1 -1 Hardness Change, Shore A, pts. ASTM	Tensile Strength, psi	ASTM D1414	3371	2624
Modulus at 100% Elongation, psi ASTM D1414 1215 2019 Specific Gravity ASTM D297 1.74 1.64 Tear Strength, Die C, ppi ASTM D624 226 248 Tg, °C ASTM D7426 -14 -14 Compression Set - - -14 -14 Compression Set - - -14 -14 To hrs. @ 392°F ASTM D395 11 15 15 18 hrs. @ 392°F Method B 16 23 Fluid Immersion, Distilled Water, 168 hrs. @ 392°F - - - Hardness Change, Shore A, pts. ASTM D471 -1 - Volume Change, % - - - - Fluid Immersion, Ne. 2 Diesel, 168 hrs. @ 302°F - - - - Hardness Change, Shore A, pts. ASTM D471 0 - - Volume Change, % - +5 - - - Hardness Change, Shore A, pts. ASTM D471 0 - -	Ultimate Elongation, %	ASTM D1414	284	160
Specific Gravity ASTM D297 1.74 1.64 Tear Strength, Die C, ppi ASTM D624 226 248 Tg, °C ASTM D7426 -14 -14 Compression Set 7 * ASTM D7426 -14 -14 Compression Set * * * * * To hrs. @ 392°F ASTM D395 11 15 *	Modulus at 50% Elongation, psi	ASTM D1414	651	1274
Tear Strength, Die C, ppi ASTM D624 226 248 Tg, °C ASTM D7426 -14 -14 Compression Set - - - - - - - - 14 -14 -14 -14 -14 - - - - -14 -14 -14 -14 - - - - -14 - - - - - 14 - 14 - - - - - - 14 14	Modulus at 100% Elongation, psi	ASTM D1414	1215	2019
Tg, °C ASTM D7426 -14 -14 Compression Set 70 hrs. @ 392°F ASTM D395 11 15 168 hrs. @ 392°F Mehod B 16 23 Fluid Immersion, Distilled Water, 168 hrs. @ 392°F -1 -1 Volume Change, % ASTM D471 -1 Fluid Immersion, Steam, 168 hrs. @ 392°F +8 Fluid Immersion, Steam, 168 hrs. @ 392°F -1 Hardness Change, Shore A, pts. ASTM D471 +2 Volume Change, % -1 -1 Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°F -1 Hardness Change, Shore A, pts. ASTM D471 +2 Volume Change, % -1 -1 Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°F -1 Hardness Change, Shore A, pts. ASTM D471 0 Volume Change, % -1 -5 Fluid Immersion, IRM 903, 168 hrs. @ 302°F -1 -1 Hardness Change, Shore A, pts. ASTM D471 0 Volume Change, % -1 -5 Fluid Immersion, IRM 903, 168 hrs. @ 302°F -1 -1 Hardness Change, Shore A, pts. 0	Specific Gravity	ASTM D297	1.74	1.64
Astronomic and a structure Astronomic and a structure <th< td=""><td>Tear Strength, Die C, ppi</td><td>ASTM D624</td><td>226</td><td>248</td></th<>	Tear Strength, Die C, ppi	ASTM D624	226	248
70 hrs. @ 392°F ASTM D395 11 15 168 hrs. @ 392°F Method B 16 23 Fluid Immersion, Distilled Water, 168 hrs. @ 392°F Hardness Change, Shore A, pts. ASTM D471 -1 Volume Change, % - +8 Fluid Immersion, Steam, 168 hrs. @ 392°F - -1 Hardness Change, Shore A, pts. ASTM D471 -1 Volume Change, % - -1 Fluid Immersion, Steam, 168 hrs. @ 302°F - -1 Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°F - -1 Hardness Change, Shore A, pts. ASTM D471 0 Volume Change, % - - -1 Fluid Immersion, IRM 903, 168 hrs. @ 302°F - - -5 Hardness Change, Shore A, pts. ASTM D471 0 - -5 Fluid Immersion, IRM 903, 168 hrs. @ 302°F - - -5 -5 Fluid Immersion, IRM 903, 168 hrs. @ 302°F - - -6 -6 Volume Change, % - - - -6 -6 Fluid Immersion, IRM 903, 168 hrs. @ 347°F	Tg, °C	ASTM D7426	-14	-14
168 hrs. @ 392°F Method B 16 23 Fluid Immersion, Distilled Water, 168 hrs. @ 392°F ASTM D471 -1 Volume Change, % +8 +8 Fluid Immersion, Steam, 168 hrs. @ 392°F +8 Hardness Change, Shore A, pts. ASTM D471 +2 Volume Change, % -1 +2 Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°F -1 Hardness Change, Shore A, pts. ASTM D471 0 Volume Change, % -1 -1 Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°F -1 -1 Hardness Change, Shore A, pts. ASTM D471 0 -1 Volume Change, % -1 -1 -1 Fluid Immersion, IRM 903, 168 hrs. @ 302°F -1 -1 -1 Hardness Change, Shore A, pts. ASTM D471 0 -1 Volume Change, % -1 -1 -1 -1 Fluid Immersion, ILM 903, 168 hrs. @ 302°F -1 -1 -1 Hardness Change, Shore A, pts. ASTM D471 0 -1 Volume Change, % -1 -1 -1 -1 H	Compression Set			
Fluid Immersion, Distilled Water, 168 hrs. @ 392°FHardness Change, Shore A, pts.ASTM D471-1Volume Change, %+8Fluid Immersion, Steam, 168 hrs. @ 392°F+8Hardness Change, Shore A, pts.ASTM D471+2Volume Change, %-1-1Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°F-1Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-1-1Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°F-1Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-5-5Fluid Immersion, IRM 903, 168 hrs. @ 302°F+5Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-1+3Fluid Immersion, IRM 903, 168 hrs. @ 347°F+3Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-0-1Fluid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F0Hardness Change, %hore A, pts.ASTM D4710Volume Change, %-00Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F-1Hardness Change, Shore A, pts.ASTM D471-4	70 hrs. @ 392°F	ASTM D395	11	15
Hardness Change, Shore A, pts. ASTM D471 -1 Volume Change, % +8 Fluid Immersion, Steam, 168 hrs. @ 392°F -1 Hardness Change, Shore A, pts. ASTM D471 +2 Volume Change, % -1 -1 Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°F -1 Hardness Change, Shore A, pts. ASTM D471 0 Volume Change, % -5 -5 Fluid Immersion, IRM 903, 168 hrs. @ 302°F +5 Hardness Change, Shore A, pts. ASTM D471 0 Volume Change, % +5 Fluid Immersion, IRM 903, 168 hrs. @ 302°F +5 Hardness Change, Shore A, pts. ASTM D471 0 Volume Change, % +3 -4 Fluid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F +3 Hardness Change, Shore A, pts. ASTM D471 0 Volume Change, % -0 -0 Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F -0 Hardness Change, Shore A, pts. ASTM D471 0 Volume Change, % -0 -0 Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F -0 <t< td=""><td>168 hrs. @ 392°F</td><td>Method B</td><td>16</td><td>23</td></t<>	168 hrs. @ 392°F	Method B	16	23
Volume Change, %+8Fluid Immersion, Steam, 168 hrs. @ 392°F+2Hardness Change, Shore A, pts.ASTM D471+2Volume Change, %-1Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°F-1Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-1+5Fluid Immersion, IRM 903, 168 hrs. @ 302°F-1Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-1+5Fluid Immersion, IRM 903, 168 hrs. @ 302°F-1-1Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-1+3-1Fluid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F-1-1Hardness Change, Shore A, pts.ASTM D4710-1Volume Change, %-1-1-1Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F0-1-1Hardness Change, Shore A, pts.ASTM D471-4-4	Fluid Immersion, Distilled Water, 168 hrs. @ 392°F			
Build Immersion, Steam, 168 hrs. @ 392°FHardness Change, Shore A, pts.ASTM D471+2Volume Change, %-1Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°F-1Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-1+5Fluid Immersion, IRM 903, 168 hrs. @ 302°F-1+5Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-1+5Fluid Immersion, IRM 903, 168 hrs. @ 302°F-1+3Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-1+3Fluid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F-1Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-10Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F0Hardness Change, Shore A, pts.ASTM D471-4	Hardness Change, Shore A, pts.	ASTM D471		-1
Hardness Change, Shore A, pts.ASTM D471+2Volume Change, %-1Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°FASTM D4710Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-1-1Fluid Immersion, IRM 903, 168 hrs. @ 302°F-1-1Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-1-1Fluid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F+3Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-10Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F0Hardness Change, Shore A, pts.ASTM D471-4	Volume Change, %			+8
Volume Change, %-1Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°FASTM D4710Hardness Change, Shore A, pts.ASTM D4710Volume Change, %-1-1Fluid Immersion, IRM 903, 168 hrs. @ 302°F	Fluid Immersion, Steam, 168 hrs. @ 392°F			
Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°FHardness Change, Shore A, pts.ASTM D4710Volume Change, %+5Fluid Immersion, IRM 903, 168 hrs. @ 302°F	Hardness Change, Shore A, pts.	ASTM D471		+2
Hardness Change, Shore A, pts.ASTM D4710Volume Change, %+5Fluid Immersion, IRM 903, 168 hrs. @ 302°F	Volume Change, %			-1
Volume Change, %+5Fluid Immersion, IRM 903, 168 hrs. @ 302°FHardness Change, Shore A, pts.ASTM D4710Volume Change, %+3Fluid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F+3Hardness Change, Shore A, pts.ASTM D4710Volume Change, %0Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F0Hardness Change, Shore A, pts.ASTM D471-4	Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°F			
Fluid Immersion, IRM 903, 168 hrs. @ 302°F ASTM D471 0 Hardness Change, Shore A, pts. ASTM D471 0 Volume Change, % +3 Fluid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F 9 Hardness Change, Shore A, pts. ASTM D471 0 Volume Change, % 0 0 Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F 0 0 Hardness Change, Shore A, pts. ASTM D471 0 Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F -4 0	Hardness Change, Shore A, pts.	ASTM D471		0
Hardness Change, Shore A, pts.ASTM D4710Volume Change, %+3Fluid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F-Hardness Change, Shore A, pts.ASTM D4710Volume Change, %0Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F0Hardness Change, Shore A, pts.ASTM D471-4	Volume Change, %			+5
Volume Change, % +3 Fluid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F +3 Hardness Change, Shore A, pts. ASTM D471 0 Volume Change, % 0 Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F 0 Hardness Change, Shore A, pts. ASTM D471 -4	Fluid Immersion, IRM 903, 168 hrs. @ 302°F			
Fluid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F ASTM D471 0 Hardness Change, Shore A, pts. ASTM D471 0 Volume Change, % 0 0 Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F 0 0 Hardness Change, Shore A, pts. ASTM D471 -4	Hardness Change, Shore A, pts.	ASTM D471		0
Hardness Change, Shore Å, pts.ASTM D4710Volume Change, %0Fluid Immersion, 95% Methanol, 168 hrs. @ 73°FHardness Change, Shore A, pts.ASTM D471-4	Volume Change, %			+3
Volume Change, % 0 Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F -4	Fluid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F			
Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F Hardness Change, Shore A, pts. ASTM D471 -4	Hardness Change, Shore A, pts.	ASTM D471		0
Hardness Change, Shore A, pts. ASTM D471 -4	Volume Change, %			0
	Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F			
Volume Change, % +6	Hardness Change, Shore A, pts.	ASTM D471		-4
	Volume Change, %			+6





OES 7004 12/11/2020

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ENGINEERING YOUR SUCCESS.