

**Contact Us** 

# 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% H<sub>2</sub>S per NACE TM0187)

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



### Specifications

Arringes, Shore A, pts     ASTM D2240     85     92       ansite Strength, psi     ASTM D1414     3371     2624       Itimate Elongation, %     ASTM D1414     284     160       Iodulus at 50% Elongation, psi     ASTM D1414     281     160       Iodulus at 00% Elongation, psi     ASTM D1414     1215     2019       pecific Gravity     ASTM D297     1.74     1.64       asar Strength, Die C, ppi     ASTM D7426     214     1.64       g, °C     ASTM D7426     1.4     1.41       compression Set     U     1.5     68       g, °C     ASTM D395     1.1     1.5       68 hrs, @ 392°F     Method B     16     23       Luid Immersion, Distilled Water, 168 hrs. @ 392°F     -1     -1       Iuid Immersion, Steam, 168 hrs. @ 392°F     -1     -1       Iuid Immersion, Steam, 168 hrs. @ 392°F     -1     -1       Iuid Immersion, Steam, 168 hrs. @ 392°F     -1     -1       Iuid Immersion, Steam, 168 hrs. @ 392°F     -1     -1       Iuid Immersion, Steam, 168 hrs. @ 392°F     -1 <th>Property</th> <th>Test Method</th> <th>VP309-80</th> <th>VP316-90</th>	Property	Test Method	VP309-80	VP316-90
ansile Strength, psi     ASTM D1414     3371     2624       Ittimate Elongation, %     ASTM D1414     284     160       fodulus at 50% Elongation, psi     ASTM D1414     651     1274       fodulus at 100% Elongation, psi     ASTM D1414     651     1274       fodulus at 100% Elongation, psi     ASTM D1414     651     1274       fodulus at 100% Elongation, psi     ASTM D1414     1215     2019       pecific Gravity     ASTM D1414     125     216       pecific Gravity     ASTM D1416     127     14       pecific Gravity     ASTM D1414     13     15       pecific Gravity     ASTM D1416     16     23       pecific Gravity     ASTM D401     16     16       polume Change, Shore A, pts.     ASTM D471     1     1	Original Physical Properties			
Itimate Elongation, %     ASTM D1414     284     160       fodulus at 50% Elongation, psi     ASTM D1414     651     1274       fodulus at 100% Elongation, psi     ASTM D1414     1215     2019       pecific Gravity     ASTM D1241     1215     2019       pecific Gravity     ASTM D624     226     248       g, °C     ASTM D7426     -14     -14       compression Set     Using 392°F     Method B     16     23       bild Immersion, Distilled Water, 168 hrs. @ 392°F     Method B     16     23       buid Immersion, Steam, 168 hrs. @ 392°F     ASTM D471     -1     1       olume Change, %     Method B     16     23       buid Immersion, Steam, 168 hrs. @ 392°F	Hardness, Shore A, pts	ASTM D2240	85	92
ASTM D1414     651     1274       todulus at 50% Elongation, psi     ASTM D1414     1215     2019       todulus at 100% Elongation, psi     ASTM D1414     1215     2019       pecific Gravity     ASTM D297     1.74     1.64       aer Strength, Die C, ppi     ASTM D624     226     248       g, °C     ASTM D7426     -14     -14       compression Set      -11     15       0 hrs. @ 392°F     ASTM D395     11     15       86 hrs. @ 392°F     ASTM D471     -1       olume Change, Shore A, pts.     ASTM D471     -1       olume Change, %     -1     -1       luid Immersion, Steam, 168 hrs. @ 392°F     -1     -1       luid Immersion, Steam, 168 hrs. @ 392°F     -1     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1     -1       luid Immersion, NFM 903, 168 hrs.	Tensile Strength, psi	ASTM D1414	3371	2624
hodulus at 100% Elongation, psi   ASTM D1414   1215   2019     pecific Gravity   ASTM D297   1.74   1.64     ear Strength, Die C, ppi   ASTM D624   226   248     g, °C   ASTM D7426   -14   -14     compression Set     Units. @ 392°F   ASTM D395   11   15     68 hrs. @ 392°F   Method B   16   23     Luid Immersion, Distilled Water, 168 hrs. @ 392°F     ardness Change, Shore A, pts.   ASTM D471   -1     olume Change, %   -11   -1   -1     olume Change, %   -85TM D471   -1   -1     olume Change, %   -11   -1   -1     uid Immersion, Steam, 168 hrs. @ 392°F   -1   -1     luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F   -1   -1     luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F   -1   -1     luid Immersion, IFM 903, 168 hrs. @ 302°F   -1   -1     luid Immersion, IFM 903, 168 hrs. @ 302°F   -1   -1     luid Immersion, IFM 903, 168 hrs. @ 302°F   -1   -1     luid Immersion, IFM 903, 168 hrs	Ultimate Elongation, %	ASTM D1414	284	160
Description     ASTM D297     1.74     1.64       ear Strength, Die C, ppi     ASTM D624     226     248       g, °C     ASTM D7426     -14     -14       compression Set     -     -     -     -       0 hrs. @ 392°F     ASTM D395     11     15     5       68 hrs. @ 392°F     Method B     16     23       luid Immersion, Distilled Water, 168 hrs. @ 392°F     -     -     1       lardness Change, Shore A, pts.     ASTM D471     -     1       olume Change, %     -     -     1     2       olume Change, Shore A, pts.     ASTM D471     -     1     2       olume Change, Shore A, pts.     ASTM D471     -     1     2       olume Change, %     -     -     1     2     1     2     1     2     1	Modulus at 50% Elongation, psi	ASTM D1414	651	1274
Astm     Deck     P26     P28       g, °C     ASTM     D624     P26     P28       g, °C     ASTM     D7426     -14     -14       compression Set        -14       compression Set      ASTM     D395     11     15       68 hrs. @ 392°F     Method B     16     23       luid Immersion, Distilled Water, 168 hrs. @ 392°F     ASTM     -1       ardness Change, Shore A, pts.     ASTM D471     -1       olume Change, %      +8       luid Immersion, Steam, 168 hrs. @ 392°F     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 392°F     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1       luid Immersion, IRM 903, 168 hrs. @ 302°F     -1       luid Immersion, IRM 903, 168 hrs. @ 302°F     -1       luid Immersion, IRM 903, 168 hrs. @ 302°F     -1       lardness Change, Shore A, pts.     ASTM D471     0       olume Change, %     -1     -1       luid Immersion, 11.5 ppg Na	Modulus at 100% Elongation, psi	ASTM D1414	1215	2019
g, °C   ASTM D7426   -14   -14     compression Set	Specific Gravity	ASTM D297	1.74	1.64
Joint Pression Set     ASTM D395     11     15       0 hrs. @ 392°F     ASTM D395     11     15       68 hrs. @ 392°F     Method B     16     23       luid Immersion, Distilled Water, 168 hrs. @ 392°F     Immersion, Distilled Water, 168 hrs. @ 392°F     -1       lardness Change, Shore A, pts.     ASTM D471     -1       olume Change, %     -     +8       luid Immersion, Steam, 168 hrs. @ 392°F     -     -       luid Immersion, Steam, 168 hrs. @ 392°F     -     -       luid Immersion, Netam, 168 hrs. @ 392°F     -     -       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -     -       lardness Change, Shore A, pts.     ASTM D471     0       olume Change, %     -     +5       luid Immersion, IRM 903, 168 hrs. @ 302°F     -     +5       luid Immersion, IRM 903, 168 hrs. @ 302°F     -     +3       luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F     -     -       luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F     -     -       luid Immersion, 95% Methanol, 168 hrs. @ 73°F     -     0       luid	Tear Strength, Die C, ppi	ASTM D624	226	248
ASTM D395°F     ASTM D395     11     15       68 hrs. @ 392°F     Method B     16     23       luid Immersion, Distilled Water, 168 hrs. @ 392°F     ASTM D471     -1       olume Change, %     ASTM D471     -1       luid Immersion, Steam, 168 hrs. @ 392°F     +8       luid Immersion, Steam, 168 hrs. @ 392°F     -1       lardness Change, Shore A, pts.     ASTM D471     +2       olume Change, %     -1     +2       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1       luid Immersion, IRM 903, 168 hrs. @ 302°F     -1       luid Immersion, IRM 903, 168 hrs. @ 302°F     -1       luid Immersion, IRM 903, 168 hrs. @ 302°F     -1       luid Immersion, IRM 903, 168 hrs. @ 302°F     -1       luid Immersion, Shore A, pts.     ASTM D471     0       olume Change, %     -3     -3       luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F     -3       luid Immersion, 95% Methanol, 168 hrs. @ 73°F     0       luid Immersion, 95% Methanol, 168 hrs.	Tg, ℃	ASTM D7426	-14	-14
Be hrs. @ 392°F   Method B   16   23     Luid Immersion, Distilled Water, 168 hrs. @ 392°F   ASTM D471   -1     lardness Change, Shore A, pts.   ASTM D471   +8     luid Immersion, Steam, 168 hrs. @ 392°F   +2     lardness Change, Shore A, pts.   ASTM D471   +2     olume Change, %   -1   +2     luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F   -1     luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F   -1     luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F   -1     luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F   -1     luid Immersion, RM 903, 168 hrs. @ 302°F   -1     luid Immersion, IRM 903, 168 hrs. @ 302°F   -1     luid Immersion, IRM 903, 168 hrs. @ 302°F   -1     lardness Change, Shore A, pts.   ASTM D471   0     olume Change, %   -1   -1     luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F   -1     lardness Change, Shore A, pts.   ASTM D471   0     olume Change, %   -1   0     luid Immersion, 1.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F   0     lardness Change, Shore A, pts.   0   0     olu	Compression Set			
Livid Immersion, Distilled Water, 168 hrs. @ 392°F     -       Iardness Change, Shore A, pts.     ASTM D471     -1       olume Change, %     +8       Livid Immersion, Steam, 168 hrs. @ 392°F     +8       lardness Change, Shore A, pts.     ASTM D471     +2       olume Change, %     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1       luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F     -1       luid Immersion, IRM 903, 168 hrs. @ 302°F     -5       luid Immersion, IRM 903, 168 hrs. @ 302°F     -5       luid Immersion, IRM 903, 168 hrs. @ 302°F     -5       luid Immersion, ILS ppg NaBr (pH = 9.5), 168 hrs. @ 347°F     +3       luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F     -4       lardness Change, Shore A, pts.     ASTM D471     0       olume Change, %     -0     0       luid Immersion, 95% Methanol, 168 hrs. @ 73°F     0       la	70 hrs. @ 392°F	ASTM D395	11	15
ardness Change, Shore A, pts.   ASTM D471   -1     olume Change, %   +8     luid Immersion, Steam, 168 hrs. @ 392°F   +2     lardness Change, Shore A, pts.   ASTM D471   +2     olume Change, %   -1   +2     luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F   -1     luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F   -1     lardness Change, Shore A, pts.   ASTM D471   0     olume Change, %   +5   +5     luid Immersion, IRM 903, 168 hrs. @ 302°F   +5   +5     luid Immersion, IRM 903, 168 hrs. @ 302°F   +5   +5     luid Immersion, IRM 903, 168 hrs. @ 302°F   +5   +5     luid Immersion, IRM 903, 168 hrs. @ 302°F   +5   +5     luid Immersion, IRM 903, 168 hrs. @ 302°F   +5   +5     luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F   +3   +3     luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F   0   0     luid Immersion, 95% Methanol, 168 hrs. @ 73°F   0   0     luid Immersion, 95% Methanol, 168 hrs. @ 73°F   0   0     luid Immersion, 95% Methanol, 168 hrs. @ 73°F   0   0     luid	168 hrs. @ 392°F	Method B	16	23
+8Iuid Immersion, Steam, 168 hrs. @ 392°FIardness Change, Shore A, pts.ASTM D471olume Change, %-1Iuid Immersion, No. 2 Diesel, 168 hrs. @ 302°F-1Iardness Change, Shore A, pts.ASTM D471olume Change, %-5Iuid Immersion, IRM 903, 168 hrs. @ 302°F-5Iuid Immersion, II.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F-6Iuid Immersion, 95% Methanol, 168 hrs. @ 73°F0Iuid Immersion, 95% Methanol, 168 hrs. @ 73°F0Iuid Immersion, 95% Methanol, 168 hrs. @ 73°F-6Iuid Immersion, 95% Methanol, 168 hrs. @ 73°F-7Iuid Immersion, 95% Methanol, 168 hrs. @ 73°F </td <td>Fluid Immersion, Distilled Water, 168 hrs. @ 392°F</td> <td></td> <td></td> <td></td>	Fluid Immersion, Distilled Water, 168 hrs. @ 392°F			
Luid Immersion, Steam, 168 hrs. @ 392°F   ASTM D471   +2     lardness Change, Shore A, pts.   ASTM D471   -1     luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F   -1     lardness Change, Shore A, pts.   ASTM D471   0     olume Change, %   -1   -1     lardness Change, Shore A, pts.   ASTM D471   0     olume Change, %   -1   -5     luid Immersion, IRM 903, 168 hrs. @ 302°F   +5     luid Immersion, IRM 903, 168 hrs. @ 302°F   -1     lardness Change, Shore A, pts.   ASTM D471   0     olume Change, %   -1   +3     luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F   +3     lardness Change, Shore A, pts.   ASTM D471   0     olume Change, %   -1   -1     lardness Change, Shore A, pts.   ASTM D471   0     olume Change, %   -1   0   -1     luid Immersion, 95% Methanol, 168 hrs. @ 73°F   0   0     luid Immersion, 95% Methanol, 168 hrs. @ 73°F   -1   -1     lardness Change, Shore A, pts.   ASTM D471   -4	Hardness Change, Shore A, pts.	ASTM D471		-1
ardness Change, Shore A, pts.ASTM D471+2olume Change, %-1luid Immersion, No. 2 Diesel, 168 hrs. @ 302°FASTM D4710olume Change, %ASTM D4710olume Change, %-1+5luid Immersion, IRM 903, 168 hrs. @ 302°F-1-1lardness Change, Shore A, pts.ASTM D4710olume Change, %-1-1luid Immersion, IRM 903, 168 hrs. @ 302°F-1-1lardness Change, Shore A, pts.ASTM D4710olume Change, %-1-1-1luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F-10luid Immersion, 95% Methanol, 168 hrs. @ 73°F00luid Immersion, 95% Methanol, 168 hrs. @ 73°F-4-4	Volume Change, %			+8
olume Change, %   -1     luid Immersion, No. 2 Diesel, 168 hrs. @ 302°F   -1     lardness Change, Shore A, pts.   ASTM D471   0     olume Change, %   +5     luid Immersion, IRM 903, 168 hrs. @ 302°F   +5     lardness Change, Shore A, pts.   ASTM D471   0     olume Change, %   +5     luid Immersion, IRM 903, 168 hrs. @ 302°F   9     lardness Change, Shore A, pts.   ASTM D471   0     olume Change, %   +3     luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F   +3     luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F   0     olume Change, %   0   0     olume Change, %   0   0     luid Immersion, 95% Methanol, 168 hrs. @ 73°F   0     luid Immersion, 95% Methanol, 168 hrs. @ 73°F   0     lardness Change, Shore A, pts.   ASTM D471   -4	Fluid Immersion, Steam, 168 hrs. @ 392°F			
Juid Immersion, No. 2 Diesel, 168 hrs. @ 302°F   ASTM D471   0     Jardness Change, Shore A, pts.   ASTM D471   0     Juid Immersion, IRM 903, 168 hrs. @ 302°F   +5     Juid Immersion, IRM 903, 168 hrs. @ 302°F   0     Jardness Change, Shore A, pts.   ASTM D471   0     olume Change, %   +3     Juid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F   +3     Juid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F   0     Juid Immersion, 95% Methanol, 168 hrs. @ 73°F   0     Juid Immersion, 95% Methanol, 168 hrs. @ 73°F   -4	Hardness Change, Shore A, pts.	ASTM D471		+2
ASTM D4710olume Change, %+5luid Immersion, IRM 903, 168 hrs. @ 302°F+5lardness Change, Shore A, pts.ASTM D4710olume Change, %+3luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F+3lardness Change, Shore A, pts.ASTM D4710olume Change, %-+3luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F0luid Immersion, 95% Methanol, 168 hrs. @ 73°F0luid Immersion, 95% Methanol, 168 hrs. @ 73°F-4	Volume Change, %			-1
olume Change, %+5luid Immersion, IRM 903, 168 hrs. @ 302°FASTM D471lardness Change, Shore A, pts.ASTM D471olume Change, %+3luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F4lardness Change, Shore A, pts.ASTM D471olume Change, %0luid Immersion, 95% Methanol, 168 hrs. @ 73°F0lardness Change, Shore A, pts.ASTM D471lardness Change, Shore A, pts4	Fluid Immersion, No. 2 Diesel, 168 hrs. @ 302°F			
Iuid Immersion, IRM 903, 168 hrs. @ 302°F   ASTM D471   0     Iardness Change, Shore A, pts.   ASTM D471   0     Iuid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F   +3     Iardness Change, Shore A, pts.   ASTM D471   0     olume Change, %   0   0     Iuid Immersion, 95% Methanol, 168 hrs. @ 73°F   0     Iardness Change, Shore A, pts.   ASTM D471   0     Iuid Immersion, 95% Methanol, 168 hrs. @ 73°F   0     Iardness Change, Shore A, pts.   ASTM D471   -4	Hardness Change, Shore A, pts.	ASTM D471		0
ardness Change, Shore A, pts.ASTM D4710olume Change, %+3luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F-lardness Change, Shore A, pts.ASTM D4710olume Change, %0olume Change, %0luid Immersion, 95% Methanol, 168 hrs. @ 73°F-lardness Change, Shore A, pts.ASTM D471-4	Volume Change, %			+5
olume Change, % +3   luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F    lardness Change, Shore A, pts. ASTM D471 0   olume Change, % 0   luid Immersion, 95% Methanol, 168 hrs. @ 73°F 0   lardness Change, Shore A, pts. ASTM D471 -4	Fluid Immersion, IRM 903, 168 hrs. @ 302°F			
Luid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F   ASTM D471   0     lardness Change, Shore A, pts.   ASTM D471   0     olume Change, %   0   0     luid Immersion, 95% Methanol, 168 hrs. @ 73°F   -4	Hardness Change, Shore A, pts.	ASTM D471		0
lardness Change, Shore A, pts.ASTM D4710olume Change, %0luid Immersion, 95% Methanol, 168 hrs. @ 73°F-4lardness Change, Shore A, pts.ASTM D471	Volume Change, %			+3
olume Change, % 0   luid Immersion, 95% Methanol, 168 hrs. @ 73°F 0   lardness Change, Shore A, pts. ASTM D471 -4	Fluid Immersion, 11.5 ppg NaBr (pH = 9.5), 168 hrs. @ 347°F			
Iuid Immersion, 95% Methanol, 168 hrs. @ 73°F   Iardness Change, Shore A, pts.   ASTM D471   -4	Hardness Change, Shore A, pts.	ASTM D471		0
lardness Change, Shore A, pts. ASTM D471 -4	Volume Change, %			0
	Fluid Immersion, 95% Methanol, 168 hrs. @ 73°F			
olume Change, % +6	Hardness Change, Shore A, pts.	ASTM D471		-4
	Volume Change, %			+6



