

# Parco

## 2269-90 HNBR Seals

### Need Extrusion Resistant HNBR Seals?

#### 2269-90 Meets Your Needs

##### 1. Superior Resistance to Extrusion

Modulus indicates the amount a seal resists deforming under stress. A seal with high modulus is more extrusion resistant than a seal with low modulus. Seals made from Parco's 90-durometer hydrogenated nitrile (HNBR) compound 2269-90 are ideal for high-pressure oil field applications that cannot use contoured back-up rings (see Figure 1). At 100 percent elongation, seals made from Parco's 90-durometer compound have a modulus of 3316 psi.

##### 2. Outstanding Resistance to Oils at High Temperatures

Exposure to oils can cause seals to swell significantly. High temperatures can also cause seals to undergo irreversible chemical changes, reducing resistance to compression set. Parco's 2269-90 seals offer outstanding resistance to oils at high temperatures. After testing 2269-90 in Industry Reference Material (IRM) 903 oil for 70 hours at 257°F, its volume swell was 13 percent.

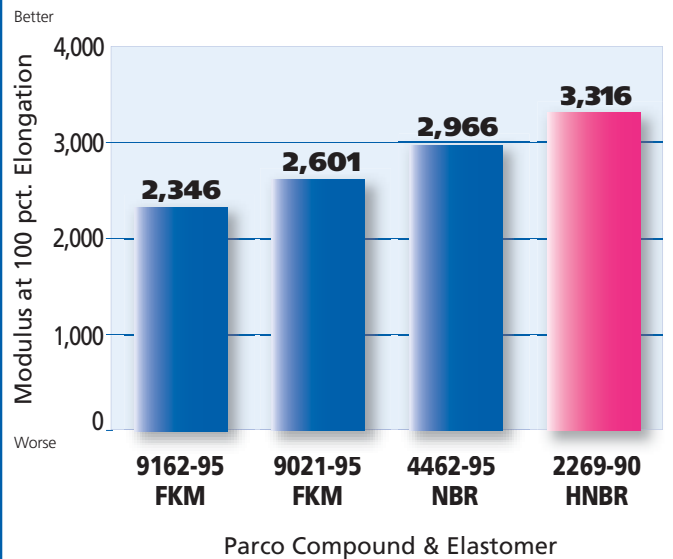
##### 3. Excellent Resistance to Compression Set

To perform properly, seals must resist taking a set from compression after being installed. When a

seal takes a set, it no longer exerts force on the mating surfaces, resulting in leakage. A compound with low compression set, like 2269-90, better maintains its elastomeric properties and original thickness, preserving seal integrity. Seals made from Parco's 2269-90 compound provide excellent resistance to compression set at higher temperatures. After testing 2269-90 for 22 hours at 212°F, it has a compression set of only 7 percent.

Fig. 1:

#### Extrusion Resistance of Typical Parco High-Durometer Compounds



Source: Parco R & D Data.

Seals made from 2269-90 have superior extrusion resistance compared to other high-durometer Parco compounds.

## Key Features

Parco's 2269-90 HNBR seals are an excellent choice for high pressure applications. Key features include the following:

- **Superior resistance to extrusion:**  
Parco 2269-90 seals have a modulus at 100 percent elongation of 3316 psi.
- **Outstanding resistance to oil at high temperatures:**  
Parco 2269-90 seals have volume swell of 13 percent in IRM 903 oil after 70 hours at 257°F.
- **Excellent resistance to compression set:**  
Parco 2269-90 seals have a compression set of only 7 percent after 22 hours at 212°F.
- **Wide range of service temperatures:**  
Parco 2269-90 seals are suitable for applications ranging from -35 to +300°F.

## Chemical Resistance

USE WITH	DO NOT USE WITH
Corrosion Inhibitors (Amine) Sour Crude (H <sub>2</sub> S-Containing) Ultraviolet Light	Automotive Brake Fluid Ethyl Acetate Gasoline

## Typical Values for Compound 2269-90 90-durometer HNBR

Section of Spec.	Physical Property	Requirement <sup>1</sup>	Typical Value	ASTM <sup>2</sup> Test Method
	<b>Original Properties</b>			
	Hardness, Shore A	90 ± 5	95	D2240
Z1	Tensile strength, MPa (psi), min.	10.0(1450)	27.9(4047)	D412
Z1	Ultimate elongation, pct., min.	80	107	D412
Z2	Modulus at 100 pct. elongation, psi	Report	3316	D412
	<b>Heat Aging</b>			
A25	<b>70 hours at 125°C (257°F)</b>			D865
	Hardness change, pts., Shore A	0 to 15	2	
	Tensile strength change, pct., max.	-25	2	
	Ultimate elongation change, pct., max.	-50	-16	
	<b>Compression Set, Solid</b>			D395
B14	<b>pct. of original deflection, max.</b> 22 hours at 100°C (212°F)	25	7	Method B
	<b>Fluid Aging, IRM<sup>3</sup> 901 Oil</b>			
EO15	<b>70 hours at 125°C (257°F)</b>			D471
	Hardness change, pts., Shore A	0 to 10	0	
	Tensile strength change, pct., max.	-20	-3	
	Ultimate elongation change, pct., max.	-35	-9	
	Volume change, pct.	-15 to 5	1	
	<b>Fluid Aging, IRM 903 Oil</b>			
EO35	<b>70 hours at 125°C (257°F)</b>			D471
	Hardness change, pts., Shore A	±10	-5	
	Tensile strength change, pct., max.	-15	-7	
	Ultimate elongation change, pct., max.	-35	-7	
	Volume change, pct.	0 to 25	13	
	<b>Low Temperature Resistance</b>			
Z3	TR-10, °C (°F)	Report	-16(3)	D1329

<sup>1</sup>Compound 2269-70 meets the requirements shown above for ASTM D2000 M4CH910 A25 B14 EO15 EO35 Z1 Z2 Z3. <sup>2</sup>ASTM is the acronym for the American Society for Testing and Materials. <sup>3</sup>IRM is the acronym for Industry Reference Material.

Source: Parco Test Report 9243.

⚠ This brochure is intended as a guideline and reference. Appropriate testing and validation by users having technical expertise is necessary for proper use of Parco products.

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