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O-Ring Compound HNBR90 Data Sheet

Material: Hydrogenated Nitrile, HNBR 90 Durometer, Black

General Information:

Also known as Highly Saturated Nitrile (HSN), it is a synthetic polymer that is obtained by saturating the double bonds in nitrile=s butadiene segments with hydrogen. HNBR has superior heat, ozone, chemical resistance and mechanical characteristics over standard Nitrile.

Cure System: Peroxide-cured

Temperature Range: -40°C (-40°F) to 150°C (302°F)

Attributes:

•Color: Black

■90±5 Shore A durometer

•Shelf-life: 15 years

Performs Well In:

- Petroleum based oils and fuels
- Aliphatic hydrocarbons
- Vegetable oils
- Silicone oils and greases
- Ethylene glycol
- Dilute acids, bases and salt solutions to moderate temperatures
- Water and steam to 150 °C (300 °F)

Doesn't Perform Well In:

- Chlorinated hydrocarbons
- Ketones
- Ethers
- Esters
- Strong acids

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TEST REPORT FOR COMPOUND HNBR90

MATERIAL: HYDROGENATED NITRILE
DUROMETER: 90
COLOR: BLACK

ASTM* D2000 M4DH910 A26 B36 EO16 EO36 F17 Z

Tensile Strength, min, Mpa 10 21.6 D412-1 Elongation, min, percent 100 229 D412-1 Specific Gravity (g/cm³) 1.28 D297-1 HEAT RESISTANCE 70 hours at 150°C (302°F), percent 10 +6 Hardness Change, points +10 +6 Elongation Change, percent -15 +17 Elongation Change, percent -25 -20.0 COMPRESSION SET, METHOD B 22 hours at 150°C (302°F), max, percent 35 17 IRM901 OIL RESISTANCE 70 hours at 150°C (302°F) Hardness Change, points -5 to +10 +4 Tensile Change, max, percent -20 +11 Elongation Change, max, percent -30 +2 Volume Change, percent -10 to +5 -3 IRM903 OIL RESISTANCE 70 hours at 150°C (302°F)	SECTION OF SPEC.	PROPERTIES	REQUIREMENTS	RESULTS	ASTM TEST METHOD
Tensile Strength, min, Mpa 10 21.6 D412-1 Elongation, min, percent 100 229 D412-1 Specific Gravity (g/cm³) 1.28 D297-1 HEAT RESISTANCE 70 hours at 150°C (302°F), percent 10 +6 Hardness Change, points +10 +6 Elongation Change, percent -15 +17 Elongation Change, percent -25 -20.0 COMPRESSION SET, METHOD B 22 hours at 150°C (302°F), max, percent 35 17 IRM901 OIL RESISTANCE 70 hours at 150°C (302°F) Hardness Change, points -5 to +10 +4 Tensile Change, max, percent -20 +11 Elongation Change, max, percent -30 +2 Volume Change, percent -10 to +5 -3 IRM903 OIL RESISTANCE 70 hours at 150°C (302°F)		ORIGINAL PHYSICAL PROPERTIES			
Elongation, min, percent Specific Gravity (g/cm³) HEAT RESISTANCE 70 hours at 150°C (302°F), percent Hardness Change, points Tensile Strength Change, percent Elongation Change, percent 22 hours at 150°C (302°F), max, percent 35 17 IRM901 OIL RESISTANCE 70 hours at 150°C (302°F) Hardness Change, points -5 to +10 Hardness Change, max, percent Elongation Change, max, percent -20 Hardness Change, max, percent -30 Hardness Change, max, percent -30 Hardness Change, percent -30 Ha		Hardness, Shore A	90±5	87	D2240-15
Specific Gravity (g/cm³) 1.28 D297-1		Tensile Strength, min, Mpa	10	21.6	D412-16
### HEAT RESISTANCE 70 hours at 150°C (302°F), percent		Elongation, min, percent	100	229	D412-16
A26 Hardness Change, points Tensile Strength Change, percent Elongation Change, percent 22 hours at 150°C (302°F), max, percent IRM901 OIL RESISTANCE 70 hours at 150°C (302°F) Hardness Change, points -5 to +10 -10 to +5 -3 IRM903 OIL RESISTANCE 70 hours at 150°C (302°F) IRM903 OIL RESISTANCE 70 hours at 150°C (302°F) IRM903 OIL RESISTANCE 70 hours at 50°C (302°F) IRM903 OIL RESISTANCE 70 hours at 150°C (302°F)		Specific Gravity (g/cm³)		1.28	D297-15
Hardness Change, points	A26	HEAT RESISTANCE			D573-10
Tensile Strength Change, percent		70 hours at 150°C (302°F), percent			
Elongation Change, percent COMPRESSION SET, METHOD B 22 hours at 150°C (302°F), max, percent 35 17 IRM901 OIL RESISTANCE 70 hours at 150°C (302°F) Hardness Change, points Tensile Change, max, percent Elongation Change, max, percent Elongation Change, max, percent Volume Change, percent -10 to +5 -3 IRM903 OIL RESISTANCE 70 hours at 150°C (302°F)		Hardness Change, points	+10	+6	
COMPRESSION SET, METHOD B 22 hours at 150°C (302°F), max, percent 35 17		Tensile Strength Change, percent	-15	+17	
B36 22 hours at 150°C (302°F), max, percent 35 17 IRM901 OIL RESISTANCE 70 hours at 150°C (302°F) Hardness Change, points -5 to +10 +4 Tensile Change, max, percent -20 +11 Elongation Change, max, percent -30 +2 Volume Change, percent -10 to +5 -3 IRM903 OIL RESISTANCE 70 hours at 150°C (302°F)		Elongation Change, percent	-25	-20.0	
22 hours at 150°C (302°F), max, percent IRM901 OIL RESISTANCE 70 hours at 150°C (302°F) Hardness Change, points Tensile Change, max, percent Elongation Change, max, percent -20 +11 Elongation Change, max, percent -30 +2 Volume Change, percent -10 to +5 -3 IRM903 OIL RESISTANCE 70 hours at 150°C (302°F)	B36	COMPRESSION SET, METHOD B			D395-18
## To hours at 150°C (302°F) Hardness Change, points		22 hours at 150°C (302°F), max, percent	35	17	
Hardness Change, points -5 to +10 +4 Tensile Change, max, percent -20 +11 Elongation Change, max, percent -30 +2 Volume Change, percent -10 to +5 -3 IRM903 OIL RESISTANCE 70 hours at 150°C (302°F)	EO16	IRM901 OIL RESISTANCE			- D471-16
Tensile Change, max, percent Elongation Change, max, percent Volume Change, percent IRM903 OIL RESISTANCE 70 hours at 150°C (302°F) D471-1 D471-1		70 hours at 150°C (302°F)			
Tensile Change, max, percent Elongation Change, max, percent Volume Change, percent IRM903 OIL RESISTANCE 70 hours at 150°C (302°F)		Hardness Change, points	-5 to +10	+4	
Volume Change, percent -10 to +5 -3 IRM903 OIL RESISTANCE 70 hours at 150°C (302°F)		Tensile Change, max, percent	-20	+11	
IRM903 OIL RESISTANCE 70 hours at 150°C (302°F)		Elongation Change, max, percent	-30	+2	
70 hours at 150°C (302°F)		Volume Change, percent	-10 to +5	-3	
	EO36	IRM903 OIL RESISTANCE			D471-16
Hardness Change points 15 2		70 hours at 150°C (302°F)			
FOR Individes Change, Politics -15 -3 D471.1		Hardness Change, points	-15	-3	
Tensile Change, max, percent -40 -4		Tensile Change, max, percent	-40	-4	
Elongation Change, max, percent -30 -17		Elongation Change, max, percent	-30	-17	
Volume Change, percent +25 +13		Volume Change, percent	+25	+13	
LOW-TEMPERATURE RESISTANCE	F17	LOW-TEMPERATURE RESISTANCE			D2137-18
nonbrittle after 3 min at -40°C pass pass		nonbrittle after 3 min at -40°C	pass	pass	
TR-10, Retraction at Lower Temperature Resistance	Z	TR-10, Retraction at Lower Temperature Resistance			D1330.16
51 mm die, 50% elongation, °C -21.9		51 mm die, 50% elongation, °C		-21.9	D1329-16

^{*}American Society for Testing and Materials