

# EPDM-70 O-RING

**MATERIAL:** Ethylene Propylene (EPR, EPDM)

## MATERIAL DESCRIPTION

Ethylene Propylene Rubber (EPDM) is a Copolymer of ethylene and propylene. Furthermore, it is a terpolymer of ethylene and propylene with a small amount of a third monomer (usually a diolefin) to permit vulcanization with sulfur. Generally, EPDM possesses an excellent resistance to ozone, sunlight and weathering, and has very good flexibility at low temperature, good chemical resistance (many dilute acids and alkalis as well as polar solvents) and good electrical insulation property.

## CURE SYSTEM: PEROXIDE-CURED

Standard EPDMs are usually sulfur cured. Sulfur cured compounds offer better flexible properties but are more prone to hardening and have an inferior compression set with high temperature. Peroxide cured EPDMs have better heat resistance and a lower compression set. It complies with long time usage, especially for hose systems in the construction industry, but is more expensive and more difficult for production than the sulfur cured EPDMs.

## OTHER COMMON VARIATIONS

- EPDMs often are internally lubricated to improve ease of installation or reduce friction for dynamic applications.
- EPDMs can be formulated with only “white list” ingredients, as specified in 21.CFR 177.2600, for use in applications where the elastomer will be in contact with food or beverages.
- EPDMs can be submitted for approval by the National Sanitation Foundation (NSF) for use in drinking water applications.
- EPDMs are usually used in automotive air conditioning systems where there is use of R134a refrigerant gas and POE or PAG lubricant and new refrigerant for environment protection R744. R744 air conditioning systems require excellent resistance to explosive decompression in hydrogen dioxide at high pressure and high temperature.
- EPDMs are usually used in phosphate ester type hydraulic fluids.

## GENERAL INFORMATION

<b>ASTM D1418 DESIGNATION</b>	EPM, EPDM	<b>STANDARD COLOR</b>	Black
<b>ISO/DIN 1629 DESIGNATION</b>	EPM, EPDM	<b>HARDNESS RANGE</b>	30 to 90 Shore A
<b>ASTM D2000/ SAE J 200 CODES</b>	AA, BA, CA, DA	<b>RELATIVE COST</b>	Low

## SERVICE TEMPERATURES

<b>STANDARD LOW TEMPERATURE</b>	-67°F -55°C	<b>SPECIAL COMPOUND LOW TEMPERATURE</b>	-67°F -55°C
<b>STANDARD LOW TEMPERATURE</b>	257°F 125°C	<b>SPECIAL COMPOUND HIGH TEMPERATURE</b>	302°F 150°C





## PERFORMS WELL IN

- Alcohols
- Automotive brake fluid
- Ketones
- Dilute acids and alkalis
- Silicone oils and greases
- Steam up to 204.4°C (400°F)
- Water
- Phosphate ester based hydraulic fluids Skydrol®
- Ozone, aging and weathering

## DOESN'T PERFORM WELL IN

- Aliphatic and aromatic hydrocarbons
- Di ester based lubricants
- Halogenated solvents
- Petroleum based oils and greases

## TEST REPORT FOR COMPOUND E70

DUROMETER: 70

COLOR: BLACK

ASTM\* D2000, M4CA714, A25, B44, EA14, F17, Z1, Z2

SECTION OF SPEC.	PROPERTIES	REQUIREMENTS	RESULTS	ASTM TEST METHOD
	<b>ORIGINAL PHYSICAL PROPERTIES</b>			
	Hardness, Shore A	70 ± 5	75	D2240-05
	Tensile Strength	2031 PSI (min)	2429 PSI (16.75 MPa)	D412-06a
	Elongation	200% (min)	259%	D412-06a
	Modulus at 100%		753 PSI (5.19 MPa)	D412-06a
	Specific Gravity		1.144 g/cm <sup>3</sup>	
A25	<b>HEAT AGE: 70 hours at 125°C (257°F)</b>			
	Hardness Change	± 10 points	+4 points	D573-04
	Tensile Strength Change	-20% (max)	-7%	
	Elongation Change	-40% (max)	-6%	
	Weight Change		-2.9%	
B44	<b>COMPRESSION SET: 70 hours at 100°C (212°F)</b>	50% (plied) (max)	8.5%	D395-03, Method B
EA14	<b>WATER RESISTANCE: 70 hours at 100°C (212°F)</b>			
	Hardness Change		-3 points	D471-06
	Tensile Strength Change		-13%	
	Elongation Change		+2%	
	Volume Change	± 5%	+4.1%	
F17	<b>LOW TEMPERATURE BRITTLENESS POINT: 3 minutes at 40°C (40°F)</b>			
	Sample type: T 50			D2137-05, Method A
	Coolant : Methanol			
	Brittleness temperature to nearest 1°C (1°F)	No crack	Pass	

\*American Society for Testing and Materials