NM507-90

Extrusion Resistant Nitrile O-Rings Meet High Pressure Demands of Boss Fittings

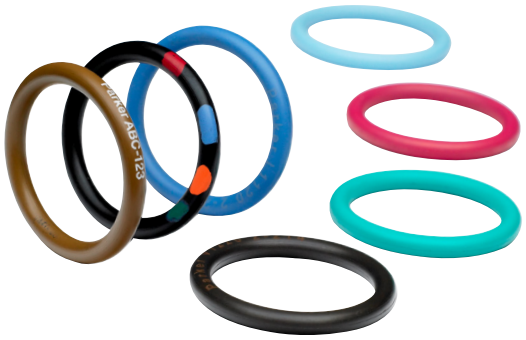
Parker's NM507-90 is a ninety-durometer, low temperature nitrile elastomer formulated to have robust mechanical properties for resisting O-ring extrusion in tube fitting applications. NM507 is often used when the application requires seals in accordance with AS28778 or MS28778 for boss fittings.

NM507 meets the challenging AMS-P-5510 SAE specification which requires a tight balance of low temperature flexibility with Mil-PRF-5606 hydraulic oil compatibility. Low temperature flexibility can be measured by Temperature Retraction. NM507 has a TR-10 value of -46° in the original condition. After a week long oil immersion at 158°F, the measured TR-10 is -43°F.

Many low temperature nitrile materials will leach plasticizer, resulting in a hardened seal that has shrunk in size. However, NM507 has excellent compatibility with Mil-PRF-5606, maintaining the hardness and having a volume change of +3% after aging at 158°F.

An all around robust seal material, NM507 seals effectively in both hot air and oily conditions. In 158°F dry air, the material retains its physical properties. Maintaining resiliency up to 160°F, the material exceeds the week long compression set requirement at 22%. In oil such as Mil-PRF-6083, the material will not corrode or adhere to Aluminum Alloys or Stainless Steel.

Formulated prior to 1961 for the original Mil-P-5510 specification, NM507 has been performing in aerospace fitting applications for decades, and continues to be available today. Contact your Authorized Parker Distributor to request NM507 in AS568 sizes certified to AMS-P-83461, AS28778 or in custom O-ring sizes as needed. NM507 can also be extruded and precision cut for square cross section O-rings, or as cord stock in a variety of geometries.



Reliable and Proven Seal Performance : Available in O-rings or extruded and precision cut seals

NM507-90 Material Test Report

Original Physical Properties	Test Method	Spec Limits	Results
Specific Gravity	ASTM D297	1.25 to 1.45	1.29
Hardness, Shore A, pts	ASTM D2240	85 to 95	86
Tensile Strength, min, psi	ASTM D1414	1450	1774
Ultimate Elongation, min %	ASTM D1414	80	107
Tensile Stress at 50% Elongation, psi min	ASTM D1414	500	677
Temperature Retraction TR-10 max, ˚ F	ASTM D1329	-45	-50
Corrosion and Adhesion	Section 3.2.11	No corrosion, no adhesion	
ASM-QQ-A-250/4 2024 Aluminum Alloy			Pass
ASM-QQ-A-250/11 6061 Aluminum Alloy			Pass
AMS-QQ-A-250-12 7075 Aluminum Alloy			Pass
AMS-QQ-S-763 440C 303 Stainless Steel			Pass
ASTM A484 303 Stainless Steel			Pass
AMS-6350 4130 Steel, Aircraft Quality			Pass
Dry Heat Resistance 168 hours ±0.5 @158˚F ± 1.8 (70˚C ± 1)	ASTM D573		
Hardness change, pts		0 to 5	4
Tensile strength change, % max		-10	-2
Elongation change, % max		-15	-11
Compression set 168 hours ±0.5 2 158˚F ± 1.8 (70˚C ± 1)	ASTM D395 Test Method B		
Percent of original deflection, max		35	27
Oil resistance in MIL-PRF-5606 (Royco 756) 168 hours ± 0.5 @ 158˚F ± 1.8 (70˚C ± 1)	ASTM D471		
Hardness change, Shore A, pts		-5 to 5	-4
Tensile strength change, % max		-15	-8
Ultimate elongation change, % max		-20	-11
Temperature retraction TR-10, max ˚F		-39	-50
Compression set, % of original deflection, max	ASTM D395 Method B		
Volume change, %		1 to 8	3

Product Benefits to Aerospace Specs:

- O-Rings on straight-threaded, flared-tube connection fittings assembled in AS4395 & AS5202 bosses in accordance with MS21344
- Systems containing air or hydraulic oil conforming to MIL-PRF-5606
- Service temperature range of -65° to 160°F (-54° to 71°C)
- O-Ring part numbers designated MS28778-xxx where xxx indicates size
- QPL listed material in accordance with AMS-P-5510
- O-Rings for use in aircraft type I hydraulic systems to seal standard fitting of the AS4395 & AS5202 bosses as indicated in MS21344

Parker O-Ring & Engineered Seals
Engineered Materials Group
2360 Palumbo Drive
Lexington, KY 40511
USA

Applications Engineering Support
Phone: +1 859 335 5101
OESmailbox@Parker.com

OES 7014 7/2025

© 2024 Parker Hannifin Corporation