



FLUOROELASTOMER, OIL SEAL, VALVE STEM, HIGH HEAT, IMPROVED OIL AND ABRASION RESISTANCE

WSS-M2D53-B3

1. SCOPE

The material defined by this specification is an abrasion resistant, high heat and oil resistant fluoroelastomer.

2. APPLICATION

This specification was released originally for material used as valve stem oil seals in automotive engines where long seal life and resistance to high detergent engine oils is required.

3. REQUIREMENTS

3.0 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.4 SLAB STOCK SPECIMENS

3.4.1 Preparation of Test Specimens

All tests are to be carried out on slab specimens (ASTM D 3182) 1.9 +/- 0.1 mm thick, manufactured from the same material and under equivalent cure conditions as for production parts. Specimens must be protected from moisture and tested as soon as possible after removal from the protective container.

3.4.2 Original Properties

Hardness, Durometer A (ISO 868/ASTM D 2240)	75 - 85 Points
Tensile Strength, min (ISO 37/ASTM D 412, Die C)	9.5 MPa
Elongation, min (ISO 37/ASTM D 412, Die C)	150%
100% Modulus, min (ISO 37/ASTM D 412, Die C)	6.2 MPa
Tear Strength, min (ISO 34/ASTM D 624, Die B)	39 kN/m
Compression Set, max (ISO 815/ASTM D 395, Method B, 70 h at +/- 1 °C)	35%

Date	Action	Revisions
2004 06 29	Revised	Para 3.0 inserted; para 3.1, 3.2, 3.3, 3.6 & 4 deleted
1998 03 16	Activated	



Documents

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3.4.3	Heat Aged (ISO 188/ASTM D 573, 168 h at 200 +/- 1 °C)	
	Hardness, Change, max	+ 3 Points
	Tensile Strength Change	-5 to + 15%
	Elongation Change, max	-25%
	100% Modulus Change, max	-20%
	180 ° Bend Test (Bent completely flat against itself)	No cracks
3.4.4	Immersion in ASTM Oil #1 (ISO 1817/ASTM D 471, 168 h at 150 +/- 1 °C, Aluminum Block)	
	Hardness Change	-4 to + 1 Points
	Tensile Strength Change	-5 to + 15%
	Elongation Change	-20 to + 10%
	180 ° Bend Test (Bent completely flat against itself)	No cracks
	Volume Change	-3 to + 4%
3.4.5	Immersion in ASTM IRM 903 Reference Oil (ISO 1817/ASTM D 471, 168 h at 150 +/- 1 °C, Aluminum Block)	
	Hardness Change	-6 to 0 Points
	Tensile Strength Change	-15 to + 10%
	Elongation change	-20 to + 10%
	180 ° Bend Test (Bent completely flat against itself)	No cracks
	Volume Change	0 to + 5%
3.4.6	Low Temperature Retraction (ASTM D 1326, TR 10)	-17 +/- 2 °C

3.5 FINISHED PARTS

3.5.1	Original Hardness, degrees (ISO 48/ASTM D 1415)	65 - 77 IRHD
3.5.2	Heat Aged (ISO 188/ASTM D 573, 168 h at 200 +/- 1 °C)	
	Hardness Change, max	