FLUOROELASTOMER (FKM), OXYGENATED/OXIDIZED FUEL RESISTANT, COMPRESSION STRESS RELAXATION RESISTANT, O-RING — **WSD-M2D401-A**

FLUOROELASTOMER (FKM), OXIDIZED FUEL RESISTANT, COMPRESSION STRESS RELAXATION RESISTANT, LOW TEMPERATURE RESISTANT, O-RING — **WSE-M2D401-A2**

FLUOROELASTOMER (FKM), OXYGENATED/OXIDIZED FUEL RESISTANT, COMPRESSION STRESS RELAXATION RESISTANT, LOW TEMPERATURE RESISTANT, O-RING — **WSE-M2D401-A3**

1. SCOPE

The material described by these specifications is a fluoroelastomer (FKM) O-ring with good resistance to highly aromatic fuels, including those containing methanol and ethanol (flex fuels).

2. APPLICATION

These specifications were released originally for material used in O-rings for use within the fuel system such as for sealing fuel injectors into the fuel rail. These materials have excellent resistance to stress relaxation, sour gas and automotive fuels insuring long-term sealability. WSE-M2D401-A2 and WSE-M2D401-A3 have good low temperature resistance and will remain serviceable down to -40 °C. Of the three materials only WSE-M2D401-A3 can be used if resistance to both low temperatures and flex fuels e.g. gasoline and methanol, are 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 MATERIAL TESTING

3.4.1 Preparation of Test Specimens

All tests shall be carried out on finished parts. When not feasible, specimens cut from molded test sheets manufactured from the same material and with equivalent cure to molded parts are recommended. The test sheets shall have the following dimensions:

150 x 150 mm, min x 2.0 +/- 0.2 mm

Date	Action	Revisions	
2004 09 17	Revised	Para 3.0 inserted; para 3.1, 3.2, 3.3, 3.15 & 4 deleted	
1997 03 06	Revised	Rev. para 3.5,3.8,3.12,3.13,3.14; Updated	E. Dodge
1990 02 06	Released	WSD-M4D401-A C10058098	B. Hennessey

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			A	A2	A3
3.5	**ORIGINAL PROPERTIES**				
	3.5.1	Hardness, International (ISO 48/ASTM D 1415, micro method)	67 - 80	68 - 82	60 - 74
	3.5.2	Tensile Strength, MPa, min (ASTM D 1414, Section 8 or ISO 37/ASTM D 412 Die C)	9.0	7.0	6.7
	3.5.3	Elongation at Break, %, min (ASTM D 1414, Section 8)	125	125	150
	3.5.4	Compression Set, %, max (ASTM D 1414, Section 10) 70 h at 200 +/- 2 °C)	35	40	50
		3.5.4.1 70 h at 130 °C	-	18%	-
	3.5.5	Tear Strength, kN/m, min (ISO 34, Method B, Procedure (a)/ASTM D 624 Die C)	25	20.0	10.0
	3.5.6	Ozone Resistance, Rating, max (FLTM BP 101-01, Procedure A)	0	0	0
3.6	**HEAT AGED** (ISO 188/ASTM D 573, 150 +/- 50 air changes/h, 1,000 h at 200 +/- 2 °C)				
	3.6.1	Hardness Change, max	+10	+7	+7
	3.6.2	Tensile Strength Change, %, max	-30	-30	-15
	3.6.3	Elongation at Break Change, %, max	-40	-12 to +20	-42
3.7	**HEAT AGED** (ISO 188/ASTM D 573, 150 +/- 50 air changes/h, 168 h at 250 +/- 2 °C)				
	3.7.1	Hardness Change, max	+15 (90 IRHD max value)	+10	+/- 10
	3.7.2	Tensile Strength Change, %, max	-15	-30	+30 to -60
	3.7.3	Elongation at Break Change, %, max	-40 (100% min value)	-25	-20 to +50

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