



WSD-M2D440-A

WSD-M2D440-A2

1. SCOPE

The materials described by these specifications are 80 IRHD (Suffix A) and 70 IRHD (Suffix A2) fluoroelastomer (FKM) materials with excellent resistance to fuels, especially those containing methanol at levels up to 100% by volume (Flexfuels).

2. APPLICATION

These specifications were released originally for material used as a Fuel Rail Seal in Fuel Injection Systems (Suffix A) and an Inlet Manifold Seal vulcanised to an aluminum carrier (Suffix A2). The material has excellent resistance to automotive fuels including those that contain high levels alcohol and/or have become oxidised ("Sour"). The material will withstand temperatures up to 150 °C for extended periods.

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

Whenever possible, all test specimens shall be die-cut from the 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

3.5	ORIGINAL PROPERTIES	Suffix A	Suffix A2
3.5.1	Hardness, International, IRHD (ASTM D 1415, Macro method)	75 - 85	65 - 75
3.5.2	Tensile Strength, min, MPa (ISO 37/ASTM D 412, Die C)	10	10
3.5.3	Elongation at Break, min, % (Test Method according to para 3.5.2)	275	250

Date	Action	Revisions
2004 09 27	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.13 & 4
1991 08 09		Suffix A2 added C10155130
1990 08 07	Final Release	C10087615



ENGINEERING MATERIAL SPECIFICATION

WSD-M2D440-A/A2

		Suffix A	Suffix A2
3.5.4	Modulus at 100% Elongation, MPa (Test Method according to para 3.5.2)	4.0 - 5.0	3.5 - 5.0
3.5.5	Compression Set, max, % (ISO 815/ASTM D 395, Method B, except 25% compression, plied-up specimens, 70 h at 150 +/- 2 °C)	20	20
3.5.6	Ozone Resistance, max. Rating (FLT M BP 101-01, Procedure A)	0	0
3.6	HEAT AGED (ISO 188/ASTM D 573, 150 +/- 50 air changes/h, 1000 h at 150 +/- 2 °C)		
3.6.1	Hardness Change, max. IRHD	+5	+5
3.6.2	Tensile Strength Change, max. %	-20	-30
3.6.3	Elongation at Break Change, max. %	-30	-40
3.7	HEAT AGED (ISO 188/ASTM D 573, 150 +/- 50 air changes/h, 168 h at 200 +/- 2 °C)		
3.7.1	Hardness Change, max. IRHD	+5	+5
3.7.2	Tensile Strength Change, max. %	-20	-30
3.7.3	Elongation at Break Change, max. %	-50	-50
3.8	IMMERSION IN FUEL C (ISO 1817/ASTM D 471, 70 h at 23 +/- 2 °C)		
3.8.1	Hardness Change, IRHD	+/- 5	+/- 5
3.8.2	Tensile Strength Change, max, %	-20	-40
3.8.3	Elongation at Break Change, max, %	-20	-40
3.8.4	Volume Change, %	0 to +10	0 to +10
3.9	IMMERSION IN FUEL C +15% METHANOL (ISO 1817/ASTM D 471, 70 h at 23 +/- 2 °C)		
3.9.1	Hardness Change, IRHD	-15 to +5	-15 to +5
3.9.2	Tensile Strength Change, max, %	-40	-40
3.9.3	Elongation at Break Change, max, %	-20	-20
3.9.4	Volume Change, %	0 to +20	0 to +20



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