



FLUOROELASTOMER (FKM)

ESP-M2D294-A3

1. SCOPE

The material defined by this specification is a high temperature and oil resistant fluoroelastomer.

2. APPLICATION

This specification was released originally for material used as a ball shuttle valve in automatic transmissions, or as specified on the engineering drawing.

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

3.4.1 Preparation of Test Specimens

All tests are to be performed on specimens die-cut from the molded test sheets manufactured from the same material and with equivalent cure to production parts.

The test sheets shall have the following dimensions:

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

3.4.2	Color	As specified on Engineering drawing
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3.4.3	Hardness, Durometer A (ASTM D 2240)	94 - 98
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3.4.4	Tensile Strength (ASTM D 412, Die C)	13 - 16 MPa
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3.4.5	Elongation, Ultimate (ASTM D 412, Die C)	70 - 90%
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3.4.6	Heat Aged (ASTM D 573, 168 h at 150 +/- 2 °C)	
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	Hardness, Durometer A Change	-3 to +6
	Tensile Strength Change	-25 to +3%
	Elongation Change	-35 to -15%

Date	Action	Revisions
2004 07 15	Revised	Para 3.0 inserted; para 3.1, 3.2, 3.3, 3.6 & 4 deleted
1986 08 22	Released	DR-611414-P



Documents

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3.4.7	Immersion in ASTM Oil #1 (ASTM D 471, 168 h at 150 +/- 2 °C)	
	Hardness, Durometer A Change	0 to +5
	Tensile Strength Change	-20 to +15%
	Elongation Change	-40 to +10%
	Volume Change	0 to +3%
3.4.8	Immersion in ASTM Oil #3 (ASTM D 471, 168 h at 150 +/- 2 °C)	
	Hardness, Durometer A Change	-2 to +4
	Tensile Strength Change	-35 to +5%
	Elongation Change	-40 to 0%
	Volume Change	+4 to +8%
3.4.9	Immersion in Designated Automatic Transmission Fluids (See Note 1) (ASTM D 471, 168 h at 150 +/- 2 °C)	
	Hardness, Durometer A Change	-5 to +7
	Tensile Strength Change	-35 to -10%
	Elongation Change	-70 to -50%
	Volume Change	+3 to +5%
3.4.10	Compression Set, max (ASTM D 395, Method B, 70 h at 150 +/- 2 °C)	20 to 30%

3.5 FINISHED PARTS

3.5.1	Color	As specified on Engineering drawing
3.5.2	Hardness (ASTM D 1415, Micro Tester)	94 - 98 IRHD
3.5.3	Heat Aged (ASTM D 573, 168 h at 150 +/- 2 °C)	
	Hardness Change	-3 to +6 IRHD
3.5.4	Immersion in Designated Automatic Transmission Fluids (See Note 1) (ASTM D 471, 168 h at 150 +/- 2 °C)	
	Hardness Change	-5 to +7 IRHD
	Volume Change	+3 to +5%

Note 1

For information on approved transmission fluids, contact:

Supervisor, Materials & Fasteners Engineering Section
Transmission & Axle Program Control & Drafting Department
Ford Motor Company
36200 Plymouth Road
Livonia, Michigan 48150