

**ETHYLENE/ACRYLIC (AEM) ELASTOMER AUTOMATIC
TRANSMISSION CLUTCH PISTON SEAL****WSP-M2D432-A****1. SCOPE**

The material defined by this specification is an ethylene/acrylic elastomer suitable for high temperature, possessing good tear resistance for installation and having moderate swell in automatic transmission fluids.

2. APPLICATION

This specification was released originally for material used in bonded clutch pistons in automatic transmission applications. The material is capable of withstanding a -40 °C to 150 °C temperature range in a reciprocating oil soaked environment. This material can possibly be used in other applications where compression set is not a concern.

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 MATERIALS 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

3.5.1	Density (ISO 1183/ASTM D 297)	1.26 - 1.30 g/cm ³
3.5.2	Hardness, International (ISO 48/ASTM D 1415)	83 - 91
3.5.3	Hardness, Durometer A (ISO 868/ASTM D 2240, instantaneous, plied-up specimen. Hand held durometers shall not be used)	85 - 91
3.5.4	Tensile Strength, min (ISO 37/ASTM D 412, Die C)	13 MPa

Date	Action	Revisions
2004 09 27	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.3, 3.12 & 4
1990 10 19	Released	NT001100070715039

**Documents**

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3.5.5	Elongation at Break, min (Test Method according to para 3.5.4)	125%
3.5.6	Modulus at 100% Elongation, min (Test Method according to para 3.5.4)	10.5 MPa
3.5.7	Tear Strength, min (ISO 34, Method B, Procedure a/ ASTM D 624, Die C)	20 kN/m
3.5.8	Brittleness Point, max (ISO 812, Type B Specimen/ ASTM D 2137, Method A)	-30 °C
3.5.9	Compression Set, max (ISO 815/ASTM D 395, Method B, except 25% compression, plied-up specimens, 168 h at 150 +/- 2 °C)	40%

3.6 HEAT AGED

(ISO 188/ASTM D 573, 168 h at 150 +/- 2 °C)

3.6.1	Hardness Change	-1 to +8
3.6.2	Tensile Strength Change	-10 to +10%
3.6.3	Elongation Change	-30 to +15%
3.6.4	Visual Evaluation	

No surface tackiness or cracks when folded flat against itself.

3.7 HEAT AGED

(ISO 188/ASTM D 573, 1000 h at 150 +/- 2 °C)

3.7.1	Hardness Change	+5 to +14
3.7.2	Tensile Strength Change, max	-20%
3.7.3	Elongation Change, max	-45%
3.7.4	Visual Evaluation	

No surface tackiness or cracks when folded flat against itself.

3.8 IMMERSION IN OIL NO. 1

(ISO 1817/ASTM D 471, 168 h at 150 +/- 2 °C)

3.8.1	Hardness Change	-15 to 0
3.8.2	Tensile Strength Change	-5 to +20%
3.8.3	Elongation Change	-20 to +10%