



**THERMOPLASTIC ELASTOMER (TEO)
POLYOLEFIN, EPDM RUBBER MODIFIED
MODERATE HEAT RESISTANT
48 DUROMETER A HARDNESS**

WSD-M2D378-A4

1. SCOPE

The material defined by this specification is a thermoplastic elastomer with a nominal instantaneous Durometer A hardness of 48 having good long term resistance to heat at temperatures up to 125 °C. Being thermoplastic the material will soften and creep at temperatures exceeding 165 °C.

2. APPLICATION

This specification was released originally for a material used as a steering column floor seal.

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 MOLDED TEST SPECIMEN

3.4.1 Preparation of Test Specimens

Unless otherwise specified, all test shall be conducted on specimens die cut from injection molded plaques 150 x 100 x 2.0 +/- 0.2 mm. The plaques shall be molded according to ISO 294 and film gated along the upper 100 mm edge and preceded by a 0.8 mm diameter pin gate. No annealing allowed, unless specified otherwise.

3.4.2 Density 0.91 - 1.01 g/cm³
(ISO 1183, Method A/ASTM D 792,
Method A1)

3.4.3 Hardness, International 48 - 58
(ISO 48/ASTM D 1415)

3.4.4 Hardness, Durometer A 43 - 53
(ISO 868/ASTM D 2240, instantaneous,
plied-up specimen.)

3.4.5 Tensile Strength, min 1.9 MPa
(ISO R 527, type 2/ASTM D 412,
Die C, 500 mm/minute test speed.
Measured Parallel to Flow)

3.4.6 Elongation at Break, min 100%
(Test acc. to para 3.4.5)

Date	Action	Revisions
2004 09 14	Revised	Para 3.0 inserted; para 3 revised; para 3.1, 3.2, 3.3, 3.11, 3.12 & 4 deleted
2001 03 05	Revised	Revised Para 3.4.5 Note & updated
1992 07 08	Released	C10227412



3.4.7	Modulus at 100% Elongation, min (Test acc. to para 3.4.5)	1.4 MPa
3.4.8	Tear Strength, min (ISO 34, Method B, procedure A/ ASTM D 624, Die C)	7.0 kN/m
3.4.9	Compression Set, max (ISO 815, Large Type-plyed specimen/ ASTM D 395, Method B, Type 1 plyed specimen)	
3.4.9.1	22 h at 70 +/- 1 °C	30%
3.4.9.2	70 h at 125 +/- 2 °C	55%
3.4.10	Brittleness Point, max (ISO 812, Type B specimen/ ASTM D 2137, Method A)	-60 °C
3.4.11	Ozone Resistance, max (FLTM BP 101-01, Procedure A, tensile specimen, at 20% elongation)	Rating 0
3.5	HEAT AGING (ISO 188/ASTM D 573, 150 +/- 50 air changes/h, 1,000 h at 125 +/- 2 °C. Unaged property values shall be determined at the time of the aged properties determination.)	
3.5.1	Hardness Change, max	+10
3.5.2	Tensile Strength Change, max	+/- 30%
3.5.3	Elongation Change, max	+/- 30%
3.6	IMMERSION IN OIL NO. 1 (ISO 1817/ASTM D 471, 168 h at 125 +/- 2 °C)	
3.6.1	Hardness Change, max	-25
3.6.2	Tensile Strength Change, max	-55%
3.6.3	Elongation Change, max	-75%
3.6.4	Volume Change, max	+120%