

**ETHYLENE/PROPYLENE RUBBER (EPDM), ENGINE
COOLANT AND COMPRESSION STRESS
RELAXATION RESISTANT****WSD-M2D376-A****1. SCOPE**

The material described by this specification is an Ethylene/Propylene rubber compound with good resistance to ethylene glycol-based engine coolants.

2. APPLICATION

This specification was released originally for material used as a radiator tank gasket. The material has excellent resistance to compressive stress relaxation at temperatures up to 125 °C. The material also has excellent resistance to splitting or bursting under combined conditions of compressive strains up to 60% and temperatures up to 135 °C.

3. REQUIREMENTS**3.1 APPROVED SOURCES**

This specification requires the use of approved sources. Only the sources identified on the Ford Approved Source List (ASL) can be used when this specification is listed on the drawing, CAD file, or other documents. The list of approved sources is located within Ford at www.mats.ford.com or available externally through a Ford Materials Engineer.

3.2 CONDITIONING AND TEST CONDITIONS

All test values are based on material conditioned for not less than 24 h prior to testing in a controlled environment of 23 +/- 2 °C and 50 +/- 5% relative humidity. Testing of the material should occur in the conditioning environment or soon after removal.

3.3 MATERIAL TESTING**3.3.1 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

3.4 ORIGINAL PROPERTIES

3.4.1	Hardness, International (ISO 48)	55 - 65
3.4.2	Hardness, Durometer A (ISO 868, Instantaneous, plied-up specimen Hand held durometers shall not be used.)	55 - 65

Date	Action	Revisions	Rev 03
2015 10 01	Revised	See summary of revisions	A. Reaume, NA
2004 09 14	Revised	Para 3.0 inserted; para 3.1, 3.2, 3.3, 3.9 & 4 deleted	
1988 02 25	Release	SM/ER 1764 TC	



3.4.3	Tensile Strength (ISO 37, Type 1 Dumb-bell)	12 MPa min
3.4.4	Elongation at break (Test Method according to para 3.5.3)	300% min
3.4.5	Modulus at 100% Elongation (Test Method according to para 3.5.3)	1.5 to 3.0 MPa
3.4.6	Compression Set (ISO 815, Sample A except 25% compression, plied-up specimen, 70 h at 125 +/- 2 °C)	25% max
3.4.7	Ozone Resistance (FLTM BP 101-01)	Rating 0 max
3.4.8	Low Temperature Retraction-TR10 (ASTM D 1329)	-40 °C min

3.5 HEAT AGED (ISO 188, 150 +/- 50 air changes/h, 1,000 h at 125 +/- 2 °C)

3.5.1	Hardness Change	0 to +10
3.5.2	Tensile Strength Change	+/- 10% max
3.5.3	Elongation at Break Change	-35% max

3.6 IMMERSION IN CURRENTLY RELEASED PRODUCTION ENGINE COOLANT

3.6.1	Compression Stress Relaxation (SAE J2979, 3000H at 125 °C 25% compression, with the procedure as noted below).	≥10% RSF (Residual Sealing Force)
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Residual sealing force readings:

Per SAE J2979 – take readings initially at 1 hour ± 5 mins, 24 hours, then at weeks 1, 3, 6, 9, 12, 15 and 18. Initial readings at 1 hour ± 5 minutes, are taken before the samples are immersed in fluid.

Use a ratio of 25±5% coolant to 75±5% air in the pressure vessel; completely immerse CSR fixtures in coolant.

Fluid Change:

Perform fluid change at week 9 of the test

Test Fluids

Coolant: (50/50 with water)

Factory fill engine coolant (Use coolant specified for each region of use)

Local service fill engine coolant (if different)

For recommended regional factory and service fill engine coolants for the Compression Stress Relaxation test, contact Ford Materials Engineering at