



HOSE, EPDM RUBBER - RAYON OR POLYESTER REINFORCED, ENGINE COOLANT RESISTANT LOW COMPRESSION SET

WSD-M96D14-A3

1. SCOPE

This specification defines an internally rayon or polyester fabric reinforced, engine coolant hose.

2. APPLICATION

This specification was released originally for a hose connection between the radiator and engine block where good resistance to compressive creep under securing clamps is required. The hose will withstand coolant and ambient air temperatures up to 120 °C but has limited resistance to excessive oil contamination and poor resistance to fuel contamination. If resistance to ambient air or coolant temperatures above 120 °C is required, then the hoses described in WSE-M96D14-A1/A2 or WSD-M96D23-A1 should be considered. Consider using WSE-M96D34-A1, A2 or A3 where resistance to electrochemical degradation is required. (Contact Materials Engineering for selection advice).

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).

3.3 DYNAMIC MECHANICAL ANALYSIS (ASTM D 4065)

Ford Motor Company, at its option, may establish a shear modulus/damping vs. temperature curves plotted for -50 to +150 °C temperature range for material/parts supplied to this specification. The shear modulus and damping curves established for initial approval shall constitute the reference standard and shall be kept on file at the designated material laboratory. All samples shall produce shear modulus and damping curves that correspond to the reference standard when tested under the same conditions.

3.5 HOSE CONSTRUCTION

The hose shall consist of an inner tube and outer cover of ethylene/propylene rubber (EPDM) with an internal reinforcing layer of a suitable knitted or braided high tenacity rayon or polyester fabric.

3.6 MATERIAL TESTING

3.6.1 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

Date	Action	Revisions
2006 08 16	Revised	Inserted 3.0; Deleted 3.1, 3.2, 3.4, 3.18, 3.19 & 4
1991 05 01	Released	C10134396



Documents

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**3.7 ORIGINAL PROPERTIES - HOSE COVER AND TUBE**

3.7.1	Hardness, International (ISO 48/ASTM D 1415)	60 - 70
3.7.2	Tensile Strength, min (ISO 37/ASTM D 412, Die C)	7 MPa
3.7.3	Elongation at Break, min (Test method according to 3.7.2)	250%
3.7.4	Modulus at 100% Elongation, min (Test method according to 3.7.2)	2.5 - 5.0 MPa
3.7.5	Ozone Resistance, Cover, max (FLTM BP 101-01, Procedure A or B)	Rating 0

3.8 HEAT AGED

(ISO 188/ASTM D 573, 150 +/- air
changes/h, 1000 h at 120 +/- 2 °C)

Hardness Change, max	+20
Tensile Strength Change, max	-15%
Elongation at Break Change, max	-65%

**3.9 IMMERSION IN CURRENTLY RELEASED PRODUCTION
ENGINE COOLANT, TUBE ONLY**

(FLTM BO 130-01, 1000 h at 120 +/- 2 °C,
see Para 5.1)

Hardness Change, max	-10
Tensile Strength Change, max	-20%
Elongation at Break Change, max	-45%
Volume Change	-10 to +15%

3.10 BURST PRESSURE, min

(Unless otherwise shown on
the Engineering Drawing or
Engineering Specification,
ASTM D 380, except for molded
hose test on full hose, for straight
hose use 250 mm length)

Hose I.D.	Burst
< 20 mm	1.2 MPa
21 - 40 mm	0.9 MPa
> 41 mm	0.5 MPa