



HOSE, POLYTETRAFLUOROETHYLENE (PTFE), CONTINUOUS FILAMENT GLASS BRAID COVERED, CONDUCTIVE FUEL RESISTANT

WSL-M96D37-A

1. SCOPE

This specification defines a hose material fabricated from seamless polytetrafluoroethylene (PTFE) tube having good fuel and permeation resistance. The cover is externally reinforced with a continuous filament glass fiber braid, which may contain up to 10% aramid fiber as an additive for wear resistance. The hose will withstand temperatures up to 250 °C and down to -40 °C.

2. APPLICATION

This specification was released originally for flexible fuel lines used for light truck applications.

2.1 LIMITATIONS

With electrostatic dissipative PTFE tubing, caution must be taken to remove large carbon agglomerates prior to billeting. The mix sequence for the incorporation of carbon black and the carbon black raw material must be evaluated for agglomerate formation and material should be sifted prior to forming the extrusion billets. These measures are to prevent the formation of potential leak paths and ensure homogenous heating during the sintering operation when using an infrared heat source.

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 HOSE CONSTRUCTION

The hose material shall consist of a tube of high grade PTFE as defined by WSL-M4D632-A with a cover of braided continuous filament 'E' type glass + up to 10% aramid fiber covering 90% minimum of the tube's outer surface. The glass braid shall be completely covered with a PTFE emulsion giving the hose a smooth abrasion resistant cover.

3.3 PERFORMANCE CRITERIA

The following tests, where possible, shall be performed on finished hoses and/or test specimens cut from them in accordance with ASTM D 3183 (cutting knife procedure preferred). Greater variation in test values can be anticipated when evaluating materials that are thinner than recommended by an applicable Industry Standard/Test Method.

Materials approved to this specification must also be approved to the fuel system polymeric materials performance standard: WSS-M98P14-A2/A6

Date	Action	Revisions	Rev 03
2018 08 26	Revised	See Summary of Revisions	G. Kowalski, NA
2008 03 19	Revised	Inserted 2.1	K. Kuenzel
1993 02 11	Released	NGA1E10269419001	L. Gullen





3.3.1	Adhesion (ASTM D 413, Strip Method, Type A, 25 mm/minute test speed, tube to cover)	262 N/m min
3.3.2	Melting Point (ISO 1218, Method B/ASTM D 789, cover only)	320 °C min
3.3.3	Burst Pressure (ASTM D 380)	3.5 MPa min
3.3.4	Cold Impact at -40 °C (SAE J844, except precondition tubing for 72 h in Fuel B at 30 °C)	2.8 MPa min
3.3.5	Fuel Permeability Resistance (SAE J30, except 85% Fuel C +15% Methanol for 21 d)	10 g/m ² /24 h
3.3.6	Flammability (ISO 3795)	
	Burn Rate	100 mm/minute max
	Hose must be self-extinguishing within 60 s.	
3.3.7	Resistance Test (SAE J1645, Less than 1x10E6 Ohm (1MegaOhm) Resistance at up to 1,000V applied between any two test points on the component/sample)	Report Value
3.3.8	Dissipation Test (SAE J1645, Dissipation elapse time to 10% of Initial Applied Voltage)	<0.5 sec
3.3.9	Resistance to Kinking	
	Test Method: Insert required length of hose on test fixture securing each end with metal clamps. When installing hose, it shall be bent within 5 s in the same plane and direction as its free state curvature. Place fixture in an oven at 120 +/- 2 °C for 1 h. Remove fixture from oven and within 5 minutes pass a steel ball of specified diameter through hose installed on fixture. Ball must pass freely.	