



FELT, SYNTHETIC FIBER FOR FILTERING AUTOMATIC TRANSMISSION FLUID

ESW-M99D18-A

1. SCOPE

The material defined by this specification is a felt composed of synthetic fiber, such as a polyester for application under hot oil service conditions.

2. APPLICATION

This specification was released originally for material used as a filtering media in automotive transmissions and hydraulic systems of cars, trucks, and tractors.

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).

3.1 FELT CHARACTERISTICS

3.1.1 Fibers shall be 100% condensation products of dimethyl terephthalate and ethylene glycol having a raw stock minimum staple length of 2 in (50 mm) and of the highest possible commercial grades available from the fiber producer.

3.1.2 Construction

The nonwoven material shall be mechanically interlocked to provide an acceptable felted structure having the following characteristics measured in accordance with ASTM D 461.

Weight 8 - 9 oz/yd²
(0.271-0.305 kg/m²)

Thickness 0.045 - 0.065 in
(1.14-1.65 mm)

Breaking Strength, min 80 lb/2 in
(356 N/51 mm)

Air Permeability 230 - 300 ft³/ft² • min
(1.17-1.52 m³/m² • s)

Date	Action	Revisions	Rev. 3
2011 06 16	Revised	Revised 3.3 for fluid type, times, and temp.	C.Ved, FNA
2006 11 15	Revised	Inserted 3.0; Deleted 3.4 & 4	
1964 03 10	Released	CPS-438100	



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Test Method: Test at 0.5 in (12.7) mm of water gage (pressure drop), over 8 in (200 mm) diameter area by air flow equipment as described in Ford Motor Company Report AYF-742 "Induction System Development Test Stand" (March 28, 1956) or ASTM D 737. The air entrance orifice size may be selected by the manufacturer to suit his needs. Values obtained, however, shall be equivalent to those obtained by Ford Motor Company Induction System, or correlation through a suitable conversion factor must be made.

3.2 FELT CHARACTERISTICS, TREATED

3.2.1 Air Permeability 220 - 300 ft³/ft² •min
(1.12 - 1.52 m³/m² •s)

The felt as described in 3.1 shall be impregnated with a thermosetting resin having the approval of the Transmission and Driveline Engineering, Livonia, MI, USA.

Test Method: Same as para. 3.1.2.

3.2.2 Resin Content of Felt, by weight 10.0 - 14.0%
(Acetone extraction method,
no volatiles)

3.3 FELT CHARACTERISTICS AFTER ASSEMBLY

3.3.1 Final cure of treated felt shall be made at completed assembly

3.3.2 Immersion in Type A, AT Fluid (WSS-M2C938-A),
(130 °C for 168, 1000, and 1500 hrs)

	<u>168 hr</u>	<u>1000 hr</u>	<u>1500 hr</u>
3.3.2.1 Breaking Load Change, max	-15%	-35%	-65%
3.3.2.2 Air Permeability Change, max	-5%	-5%	-5%

3.3.3 Immersion in Type A, AT Fluid (WSS-M2C938-A),
(150 °C for 168 hrs))

	<u>168 hr</u>
3.3.3.1 Breaking Load Change,	-80% max
3.3.3.2 Air Permeability Change	-5% max

4. GENERAL INFORMATION

This information given below is provided for clarification and assistance in meeting the requirements of this specification.

5. SUMMARY OF REVISIONS

2011 Updated fluid type, time, and temperature for fluid immersion.