

**NITRILE BUTADIENE RUBBER, HARD CELLULAR COMPOUND -
FUEL RESISTANT****ESF-M2D74-A****1. SCOPE**

The material defined by this specification is a hard cellular nitrile butadiene rubber composition. It is written around the lowest density of 160 - 190 kg/m³ and equal or better performance may be expected of the higher densities.

2. APPLICATION

This specification was released originally for material used as a float for carburetors or fuel tank sending units, where resistance to hydro-carbon fuels is required.

3. REQUIREMENTS**3.1 STANDARD REQUIREMENTS FOR PRODUCTION MATERIALS**

Material suppliers and part producers must conform to the Company's Standard Requirements For Production Materials (WSS-M99P1111-A).

3.2 ABSORPTION

With a smooth sawcut, section the part approximately in half. The cut is to be oriented along the axis of the hole, or so as to remove any molded-in insert, as applicable.

Immerse the remaining specimen in a mixture of two volumes of ASTM Fuel C with one volume of anhydrous ethanol. Attach a reflux condenser to the vessel and heat 24 h at 60 °C.

The specimen should increase in weight no more than 30%. The appearance of the specimen should not change appreciably, but a slight softness may be noted.

3.3 TEMPERATURE

The parts may soften at approximately 116 °C and at higher temperatures may expand due to the pressure of the entrapped gas. The material should not melt or become sticky but may be subject to thermal shock and may crack if heated rapidly to high temperatures.

3.4 FUEL RESISTANCE

To be run for initial sample approval and at intervals as specified. The parts must withstand weight, volume and hardness changes when immersed for 24 h at 60 °C according to ASTM D 471, in the following fuels and blends:

Note: Parts to be checked as received.

Date	Action	Revisions	Rev 03
2015 09 01	Re-activate		G. Kowalski, NA
2010 06 25	N-STATUS	No replacement named	C. Mrazna, NA
1963 06 21	Released	F6-1068	





<u>Fuel or Blend</u>	<u>Floats with Inserts</u>		<u>Floats Without Inserts</u>	
	<u>% Weight Change</u>	<u>% Volume Change</u>	<u>% Weight Change</u>	<u>% Volume Change</u>
Commercial Gasoline	-2, +2	-2, +2	-2, +2	-2, +2
ASTM Fuel C	-3, +3	-3, +3	-3, +3	-3, +3
Anhydrous Methanol	0, +25	+5, +20	0, +45	0, +20
Anhydrous Ethanol	0, +10	-1, +6	0, +15	-1, +6
10% Butyl Acetate & 90% Iso-octane	0, +2	-2, +2	0, +2	-2, +2
10% Acetone & 90% Iso-octane	0, +3	-2, +2	0, +3	-2, +2
Sour Gasoline (See FLTM AZ 105-01 for content)	-1, +4	-2, +2	-1, +4	-2, +2

3.5 SURFACE

The part shall have a smooth surface and its normal skin acquired through the molding process should not be disturbed in any manner.

4. GENERAL INFORMATION

The information given below is provided for clarification and assistance in meeting the requirements of this specification. Contact gmfs@ford.com for questions concerning Engineering Material Specifications.

5. SUMMARY OF REVISIONS