

ENGINEERING MATERIAL SPECIFICATION

Material Name

Specification Number

SOAP, LIQUID TYPE - TIRE MOUNTING LUBRICANT

ESA-M1B14-A

1. SCOPE

The material defined by this specification is a ready-to-use liquid soap of uniform composition.

2. APPLICATION

This specification was released originally for material used as a lubricant for mounting tires.

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 COLOR Clear Amber

3.3 pH, max 10.5
(ASTM E 70)

3.4 SURFACE TENSION, max 35 N/m
(ASTM D 1331)

3.5 TOTAL SOLIDS, min 1.00 %
(ASTM D 460, Method A)

3.6 UNSAPONIFIED AND UNSAPONIFIABLE MATTER, max 0.5 %
(ASTM D 803)

3.7 EFFECT ON RUBBER, Volume Increase, max 7.00 %
70 h at 23 +/- 2 °C on R515 type natural rubber

3.8 SPECIFIC GRAVITY 1.00 - 1.02
(ASTM D 891, Method C)

3.9 VISCOSITY, seconds at 23 +/- 2 °C, min 10.0
(ASTM D 1200, Ford #4 cup)

Date	Action	Revisions
2002 07 23	Revised	Updated and renumbered
1989 11 10	NC00E10036140001	Released

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3.10 CORROSION

Ford Motor Company, at its option, may conduct corrosion testing on materials/parts supplied to this specification.

No pitting, etching or visible corrosion on the surface of steel, brass, aluminum and tin plate.

Test Method

Clean 25 mm x 76 mm strips of metals to be tested. Strips shall be immersed one each in a 100 mL test tube containing 15 mL of lubricant test sample. The test tube shall be lightly stoppered with a cork stopper, supported in a beaker, then placed in an oven at 70 +/- 2 °C for 70 h. The strips shall be examined under magnification of 20 diameters for evidence of corrosion.

3.11 COEFFICIENT OF STATIC FRICTION TEST

3.11.1 Wet, max

0.3

Test Procedure: A rubber test slab shall be prepared from unplasticized natural rubber sheet which conforms to compositions agreed upon between supplier and Ford Motor Company. The rubber test slab shall be 76 mm by 100 mm with a 3 mm diameter hole centered on a line 6 mm from one end. An additional steel test panel 152 mm by 152 mm by 1 mm (Parker or Q-panel-unpolished) shall be used as bottom plate for the test. Both the rubber test slab and the steel panels shall be thoroughly cleaned with water and given a rinse with isopropyl alcohol. A thin layer of lubricant shall then be applied to one surface of both the steel test panel and the rubber test slab. The steel test panels shall be clamped, lubricated side up, in a stationary position on a flat, horizontal surface and the rubber test slab shall be placed, lubricated side down, horizontally on the metal test panel. A steel plate, of known weight, measuring 75 mm by 100 mm shall be placed unlubricated on the top of the rubber test slab.

A standard kilogram weight shall be placed on top of, and centered on, the small steel plate. A cord of 305 mm to 610 mm in length is then attached through the hole in the rubber test slab. This cord shall be placed over a pulley which is so placed that the cord is held horizontally in line with the rubber test slab between the slab and the pulley. The pulley shall be of such construction and so lubricated as to turn freely under load. Force (weight) shall then be applied to the free end of cord in small increments not to exceed increases greater than 10 g per second, until the rubber test slab begins to slide. The coefficient of friction shall be calculated using the following formula:

$$U = F/N$$

Where F=Weight required to move one surface over the other

U=Coefficient of static friction

N=Total weight pressing the surfaces together