



TIRE MOUNTING LUBRICANT PERFORMANCE

WSS-M13P15-A

1. SCOPE

This specification defines the requirements for approving lubricants used in tire mounting.

2. APPLICATION

This performance specification was originally released for material used as a lubricant to mount a tire onto the wheel.

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 CORROSION

No pitting, etching or visible corrosion on the surface of metallic substrates.

Test Procedure

All potentially exposed metallic substrates and wheel components (i.e. wheel sections, tire valve stems, balance weights, etc.) shall be immersed in a beaker of 100 mL of lubricant, then placed in an oven at 70°C for 70 h. A watchglass can be placed over the beaker to inhibit evaporation. The samples shall then be rinsed with water, and examined under magnification of 20X for evidence of corrosion.

3.3 COEFFICIENT OF STATIC FRICTION TEST

3.3.1 Wet

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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 x 152 mm x 1 mm) 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 rinsed 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

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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

Contact Ford Product Engineering regarding procurement of rubber test slabs.

Cold rolled steel test panels can be procured via the following source:

ACT Test Panel Technologies

<http://www.acttestpanels.com/home.aspx>

3.3.2 Dry

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After rubber slab has been prepared according to para 3.3.1, allow to dry for 48 h prior to testing in a humidity of approximately 50 +/- 10% at 23 +/- 2 °C.

3.4 FREEZE-THAW STABILITY

Using a closed glass vessel, a 100 mL sample of the undiluted (neat) material shall be frozen over a 24 h period to complete solidification. The sample shall then be removed to a 23°C environment and allowed to thaw without any physical agitation. Upon complete thawing, the material shall exhibit no evidence of separation or precipitation.

3.5 EFFECT ON RUBBER, VOLUME CHANGE (ASTM D4289, except 23°C)

-1.0 to +1.0%

3.6 CHEMICAL ATTACK to PAINTED SURFACES (FLTM BJ 126-01)

No staining or softening
of automotive finishes

Note: Include chemical attack test when used in contact with paint surfaces, ex. E-coat and powder coat.

3.7 RESISTANCE TO STRESS CRACKING (FLTM BO 127-03)

No cracking or crazing

Note: Include resistance to stress cracking when used in contact with polymers such as PC, ABS, PC+ABS, ASA or acrylic.

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