

**PERFORMANCE REQUIREMENTS OF ISO METRIC MALE THREADED FASTENERS WITH SEALER COMPOUND APPLIED TO THE THREADS****1. SCOPE**

This specification covers the performance of ISO metric or SAE J476a to allow use with male threaded fasteners with sealer compound applied to the thread.

NOTE: Fasteners with a sealer compound applied to the thread are not recommended for re-use after initial assembly.

Chemical residues from subsequent wash procedures may adversely affect the curing performance of the compound, and care should be taken in the selection of any media employed.

NOTE: These materials may be specified on fasteners that have multiple stage finishing processes. In some cases it may be advantageous to apply the adhesive material prior to the torque control lubricant. It is recommended that the processing route be agreed between the fastener maker, surface finisher and adhesive applicator to meet the Ford requirements.

1.1 REFERENCES

WSE-M97B44-B	-	Coolant, Extended life - Concentrate for systems containing cast and wrought aluminum
WSE-M2C903-A2	-	Oil, Engine - ILSAC GF-1, SAE 10W-30
WSS-M2C938-A	-	Fluid, Automatic Transmission
WSS-M18P12-A	-	Sealant, thread, dry film
SAE J476 a	-	Dryseal pipe threads

2. SEALER MATERIAL

Sealer material must be as specified in WSS-M18P12-A.

3. SEALER - DIMENSIONS AND POSITION ON THREAD

Fasteners shall have sealer compound applied to the thread at a length of one nominal thread diameter +/- 1 thread pitch and with two full threads at the end of the fastener free from any compound unless otherwise specified. For adequate performance, the length of sealer compound shall not be less than three full thread pitches. The angle covered by the sealer compound shall be 360°. No compound is permitted in the thread runout, on the underhead bearing face, or on the plain shank of fastener. For 1/8 PTF SAE SHORT plugs, one full thread from the end of the plug shall be free of any compound. Compound is permitted in the thread runout but is not permitted on the drive feature end surface of such parts. The dimensions and position of the sealer compound shall be as specified on the Ford drawing.

4. ROUTINE QUALITY CONTROL TEST

Fasteners coated with the sealer compound, taken from production batches, must be screwed into a steel container capable of being pressurized to 2 bar minimum for one hour.

The female thread in the steel container shall be unplated, clean and dry to a 6H tolerance or suitable to the pipe thread.

When assembled in the container 3 - 4 sealer coated threads shall be in contact with the female thread described above.

A clamping force shall not be induced in the fastener, and the assembly must then be left to cure for **24 hours** at 20° maximum speed of assembly must not exceed 30 r.p.m.



The assembly shall then be immediately filled with antifreeze to WSE-M97B44-B diluted to 40% with water with a fluorescent dyestuff added. The assembly shall be pressurized to 2 bar at 20° +/- 1°C, and there shall be no evidence of leakage when viewed under ultra-violet light.

5. INITIAL APPROVAL OF SEALER COMPOUND AND NEW SUPPLIERS

5.1 PREPARATION OF TEST ASSEMBLIES

Fasteners coated with the sealer compound, taken from production batches, must be screwed into a steel container capable of being pressurized to 2 bar minimum for one hour.

The female thread in the container shall be unplated, clean and dry steel and must have a 6H tolerance.

When assembled in the container 3 - 4 sealer coated threads shall be in contact with the female thread described above.

No clamping force shall be induced in the fastener and the maximum speed of assembly must not exceed 30 r.p.m.

The assembly must then be left to cure for 24 hours at 20°C.

NOTE: Test assemblies must be subjected to the test conditions immediately after completion of the 24 hour curing time.

5.2 TEST METHODS

Using screws M10 x 55 with a surface finish in accordance with S437 (WX 100) that have sealer compound applied to the thread as specified in Clause 3, prepare test assemblies as specified in Clause 5.1. Fill these test assemblies with fluid as specified in Clauses 5.2.1, 5.2.2, 5.2.3, and 5.2.4 respectively and add a fluorescent dyestuff.

Subject test assemblies to test conditions specified in Clauses 5.2.1, 5.2.2, 5.2.3, 5.2.4, 5.2.5 and 5.2.6. There must be no evidence of leakage under ultra-violet light.

5.2.1 WATER/ANTIFREEZE RESISTANCE

Antifreeze to WSE-M97B44-B diluted to 40% with water. The test period shall be 5 hours at 120 +/- 2°C with the test assembly pressurized to 2 bar.

5.2.2 OIL RESISTANCE. Oil to WSE-M2C903-A2 (SAE 10W30) for 5 hours at 160 +/- 2°C with the test assembly pressurized to 4 bar.

5.2.3 FUEL RESISTANCE. ASTM Fuel C + 15% methanol for 5 hours at 70 +/- 2°C with the test assembly pressurized to 4 bar.

5.2.4 AUTOMATIC TRANSMISSION FLUID RESISTANCE. Automatic transmission fluid to WSS-M2C938-A for 5 hours at 150 +/- 5°C with the test assembly pressurized to 4 bar.

5.2.5 HEAT RESISTANCE. Condition test assemblies for 5 hours at 120°C +/- 2°C then subject them to Clauses 5.2.1, 5.2.2, 5.2.3, and 5.2.4 when the test assemblies have returned to 20°C.

5.2.6 COLD RESISTANCE. Condition test assemblies for 5 hours at -30°C +/- 2°C then subject them to Clauses 5.2.1, 5.2.2, 5.2.3, and 5.2.4 when the test assemblies have returned to 20°C.