Report On
Used Oil Aging for LSPI
Version

Conducted For

	V = Valid
	I = Invalid
	N = Results cannot be interpreted as representative of oil performance (Non-reference oil) and shall not be used for multiple test acceptance

	NR = Non-reference oil test
	RO = Reference oil test

Test Number		
Test Stand	Number of Tests Since Last Stand Calibration Test	Total Runs on Test Stand

Lab Engine Number		Total Runs on Engine	
Test Fuel		Fuel Batch	
EOT Date		EOT Time	
Oil Code			
Formulation/Stand Code			
Alternate Codes			

In my opinion this test ___ been conducted in a valid manner in accordance with the Test Method, D XXXX, and appropriate amendments. The remarks included in the report describe the anomalies associated with this test.

Submitted By: _____
Testing Laboratory

_____
Signature

_____
Typed Name

_____
Title

Used Oil Aging For LSPI
Form 2
Table of Contents

   [A] ACC Conformance Statement is required for only ACC registered tests

Used Oil Aging For LSPI
Form 3
Summary of Test Method

The LSPI engine oil aging test is a fired engine dynamometer lubricant test which ages the engine oil in preparation for the evaluation of the oil in the Seq IX LSPI test. The running duration is 72 hours.

The Used oil aging for LSPI uses a Ford water cooled, 4 cycle, in-line cylinder, 2.0 liter EcoBoost engine as the test apparatus. The engine incorporates a dual overhead cam, four valves per cylinder (2 intake; 2 exhaust), and direct acting mechanical bucket lifter valve train design. An Eight hour break-in schedule is conducted prior to going on test conditions. Used Oil analysis is performed before and at the end of test.

The test sequence is as outlined in the table below:

Parameter	Units	Quntity
Duration	H	72
Engine Speed	r/min	2500
Engine Torque	N·m	128
Oil Gallery Temperature	°C	100
Coolant Out Temperature	°C	85
Coolant Flow	L/min	70
Intake Air Temperature	°C	32
Intake Air Pressure	kPa	0.05
Intake Air Humidity	g/kg	11.4
Coolant Pressure	kPa	70
Air Charge Temperature	°C	30
Air-Fuel Ratio	λ	1.0
Exhaust Backpressure	kPa	107
Blowby	L/min	65-75

Used Oil Aging For LSPI
Form 4
Test Result Summary

Lab		Oil Code	
Stand		Test No.	
Laboratory Oil Code			
Formulation Stand Code			

Date Started		Engine No.	
Time Started		Fuel Batch	
Date Completed		SAE Viscosity	
Time Completed		Reference Oil	
Test Length			

Critical Oil Analysis Results

Analysis Parameter	New Oil	End of Test
Total Acid Number		
Total Base Number		
Kinematic Viscosity @ 40 °C		
Kinematic Viscosity @ 100 °C		
Soot Concentration		
Oxidation, FTIR by D7414		
Nitration, FTIR by D7624		
Fuel dilution, D3525		

Used Oil Aging For LSPI
Form 5

Operational Summary

Lab		Oil Code	
Stand		Test No.	
Laboratory Oil Code			
Formulation Stand Code			

Controlled Parameters

Parameter	Units	QI Threshold	EOT QI	Target	Average	Number of Samples	Number of BQD
Speed	r/min	0.000		2500			
Torque	N·m	0.000		128			
Oil Gallery	ºC	0.000		100			
Coolant Out	ºC	0.000		85			
Coolant System	kPa	0.000		70			
Engine Coolant Flow	L/min	0.000		70			
Intake Air Humidity	g/kg	0.000		11.4			
Intake Air Pressure	kPa	0.000		0.05			
Exhaust Back Pressure	kPaa	0.000		107			
Intake Air Temperature	ºC	0.000		32			
Air Charge Temperature	ºC	0.000		30			
Lambda	λ	0.000		1			
Blowby	L/min			65-75			

Non Controlled

Parameter	Units	Average	Number of Samples	Number of BQD
Ambient Cell	ºC			
Fuel Flow	kg/h			
Ignition Voltage	V			
Fuel Temperature	ºC			
Coolant In Temperature	ºC			
Oil Filter In Temperature	ºC			
Exhaust Temperature	ºC			
Manifold Absolute Pressure	kPaa			
Boost Pressure	kPaa			
Barometric Pressure	kPaa			
Oil Gallery Pressure	kPa			
Oil Head Pressure	kPa			
Crankcase Pressure	kPa			
Fuel Pressure	kPa			
Pre-Intercooler Pressure	kPaa			

Used Oil Aging For LSPI
Form 6
Used Oil Analysis Results

Lab		Oil Code	
Stand		Test No.	
Laboratory Oil Code			
Formulation Stand Code			

Analytical Measurement	NEW	EOT
Aluminum (Al) by D5185		
Boron (B) by D5185		
Calcium (Ca) by D5185		
Chromium (Cr) by D5185		
Copper (Cu) by D5185		
Iron (Fe) by D5185		
Lead (Pb) by D5185		
Manganese (Mn) by D5185		
Molybdenum (Mo) by D5185		
Potassium (K) by D5185		
Phosphorus (P) by D5185		
Silicone (Si) by D5185		
Sodium (Na) by D5185		
Tin (Sn) by D5185		
Zinc (Zn) by D5185		

Used Oil Aging For LSPI
Form 7
Oil Level and Blowby Results

Lab		Oil Code	
Stand		Test No.	
Laboratory Oil Code			
Formulation Stand Code			

Test Hour	Oil Consumed, g
Total Oil Consumed	

Blowby	
Test Hours	**Blowby, L/min**
1.5	
3.5 to 3.75	
23.5 to 23.75	
47.5 to 47.75	
71.5 to 71.75	
Maximum	
Minimum	
Average	

Used Oil Aging For LSPI
Form 8
Downtime Summary

Lab		Oil Code	
Stand		Test No.	
Laboratory Oil Code			
Formulation Stand Code			

Number of Downtime Occurrences				
Test Hours	Date	Downtime	Reasons	
		Total Downtime (hours)		

Used Oil Aging For LSPI
Form 9
Test Comments

Lab		Oil Code	
Stand		Test No.	
Laboratory Oil Code			
Formulation Stand Code			

Number of Comment Lines		

Used Oil Aging For LSPI
Form 10
American Chemistry Council Code of Practice
Test Laboratory Conformance Statement

Test Laboratory	
Test Sponsor	
Formulation / Stand Code	
Test Number	

Start Date		Start Time		Time Zone	

Declarations

No. 1   All requirements of the ACC Code of Practice for which the test laboratory is responsible were met in the conduct of this test.   Yes _____   No _____ *

No. 2   The laboratory ran this test for the full duration following all procedural requirements; and all operational validity requirements of the latest version of the applicable test procedure (ASTM or other), including all updates issued by the organization responsible for the test, were met. Yes _____   No_____*

         If the response to this Declaration is "No", does the test engineer consider the deviations from operational validity requirements that occurred to be beyond the control of the laboratory? Yes _____*   No_____

No 3.   A deviation occurred for one of the test parameters identified by the organization responsible for the test as being a special case.   Yes _____*   No_____ (This currently applies only to specific deviations identified in the ASTM Information Letter System)

	Operational review of this test indicates that the results should be included in the Multiple Test Acceptance Criteria calculations.
	*Operational review of this test indicates that the results should not be included in the Multiple Test Acceptance Criteria calculations.

Note: Supporting comments are required for all responses identified with an asterisk.

Comments

_____   _____
Signature   Date

_____   _____
Typed Name   Title