Two-Stroke-Cycle Gasoline Engine Lubricant Evaluation
D4857 (Y350M2) ASTM TC Sequence I Test Procedure
Title / Validity Declaration Page

Form 1

Version TC1 VERSION 20011127

Conducted

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC
CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

C	I = Invalid
	V =Valid

CC	RO = Reference Oil Test
	NR = All Other Test

Test Number			
Engine No.: CCCCCCCCCCCCCCC		**Engine Run** CCC	
EOT Time: HH:MM		**EOT Date:** YYYYMMDD	
Reference Oil	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	**CYLINDER:** S1	
Non Reference Oil	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	**CYLINDER:** S1	
Formulation/Stand	CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC		
Alternate Codes:	CCCCCCCCCCCCCCC	CCCCCCCCCCCCCCC	CCCCCCCCCCCCCCC

In my opinion this test CCCCCCCC been conducted in accordance with the Test Method D4857 and the appropriate amendments through information letter system. The remarks included in this report describe the anomalies with this test.

Submitted By: **CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC**

Testing Laboratory

Signature Image

Signature

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

Typed Name

CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC

Title

Two-Stroke-Cycle Gasoline Engine Lubricant Evaluation
D4857 (Y350M2) ASTM TC Sequence I Test Procedure
Table of Contents
Form 2

Lab: CC	**EOT Date:** YYYYMMDD	**End Time:** HH:MM
Engine No.: CCCCC	**Run Number:** CCC	
Reference Oil CCCC

Two-Stroke-Cycle Gasoline Engine Lubricant Evaluation
D4857 (Y350M2) ASTM TC Sequence I Test Procedure
Test Result Summary
Form 4

Lab: CC	**EOT Date:** YYYYMMDD	**End Time:** HH:MM
Engine No.: CCCCC	**Run Number:** CCC	
Reference Oil CCCC

Two-Stroke-Cycle Gasoline Engine Lubricant Evaluation
D4857 (Y350M2) ASTM TC Sequence I Test Procedure
Ring Land Ratings
Form 5

Lab: CC	**EOT Date:** YYYYMMDD	**End Time:** HH:MM
Engine No.: CCCCC	**Run Number:** CCC	
Reference Oil CCCC

Two-Stroke-Cycle Gasoline Engine Lubricant Evaluation
D4857 (Y350M2) ASTM TC Sequence I Test Procedure
Ring Ratings
Form 6

Lab: CC	**EOT Date:** YYYYMMDD	**End Time:** HH:MM
Engine No.: CCCCC	**Run Number:** CCC	
Reference Oil CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		**Cylinder:** S1
Non Reference Oil CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		**Cylinder:** S1
Formulation / Stand Code: CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC		

Cylinder Number	Ring Number	NMMA Rating	-1.85 Correction Factor [A]	Visual Rating	Adjusted Rating [B]
S1	S1	S1.12	S1.12	S1.1	S1.1
S1	S1	S1.12	S1.12	S1.1	S1.1
S1	S1	S1.12	S1.12	S1.1	S1.1
S1	S1	S1.12	S1.12	S1.1	S1.1
S1	S1	S1.12	S1.12	S1.1	S1.1
S1	S1	S1.12	S1.12	S1.1	S1.1

[A] *A correction factor of -1.85 merits is applied to the benchmark reference oil (TMC 606) second ring sticking results, when run with the non-reference oil.*

[B] *The adjusted ring rating is calculated by averaging the NMMA ring rating and the visual ring rating. The visual ring rating is calculated by assessing the total number of degrees the ring visually appears to be stuck in the groove. The normal NMMA ring ratings are then applied as though the ring is firmly stuck over the area, even though in most cases rings in this condition can be forced to move throught the application of varying amounts of pressure.*

Two-Stroke-Cycle Gasoline Engine Lubricant Evaluation
D4857 (Y350M2) ASTM TC Sequence I Test Procedure
Operational Summary
Form 7

Lab: CC	**EOT Date:** YYYYMMDD	**End Time:** HH:MM
Engine No.: CCCCC	**Run Number:** CCC	
Reference Oil CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		**Cylinder:** S1
Non Reference Oil CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		**Cylinder:** S1
Formulation / Stand Code: CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC		

Parameters	**Phase I**			**Phase II**		
	Maximum	**Minimum**	**Average**	**Maximum**	**Minimum**	**Average**
Engine Speed, r/min	S123	S123	S123	S123	S123	S123
Dynamometer Speed, r/min	S123	S123	S123	S123	S123	S123
Observed Load, hp	S1.12	S1.12	S1.12	S1.12	S1.12	S1.12
Corrected Load, hp	S1.12	S1.12	S1.12	S1.12	S1.12	S1.12
Air / Fuel Ratio #1	S1.12	S1.12	S1.12	S1.12	S1.12	S1.12
Air / Fuel Ratio #2	S1.12	S1.12	S1.12	S1.12	S1.12	S1.12
Air Flow #1 lb / h	S1.12	S1.12	S1.12	S1.12	S1.12	S1.12
Air Flow #2 lb / h	S1.12	S1.12	S1.12	S1.12	S1.12	S1.12
Fuel Flow #1 lb / h	S1.12	S1.12	S1.12	S1.12	S1.12	S1.12
Fuel Flow #2 lb / h	S1.12	S1.12	S1.12	S1.12	S1.12	S1.12
Pressures						
Fuel Pressure #1, psi	S1.12	S.12	S1.12	S1.12	S1.12	S1.12
Fuel Pressure #2, psi	S1.12	S1.12	S1.12	S1.12	S1.12	S1.12
Intake Air Pressure, in. H_2O	S1.123	S1.123	S1.123	S1.123	S1.123	S1.123
Barometric Pressure, in. Hg	S1.12	S1.12	S1.12	S1.12	S1.12	S1.12
Temperatures, ° F						
Spark Plug #1	S12	S12	S12	S12	S12	S12
Spark Plug #2	S12	S12	S12	S12	S12	S12
Cylinder Liner #1	S12	S12	S12	S12	S12	S12
Cylinder Liner #2	S12	S12	S12	S12	S12	S12
Exhaust #1	S123	S123	S123	S123	S123	S123
Exhaust #2	S123	S123	S123	S123	S123	S123
Fuel #1	S12	S12	S12	S12	S12	S12
Fuel #2	S12	S12	S12	S12	S12	S12
Intake Air, Carburetor	S12	S12	S12	S12	S12	S12
Intake Air Dew Point	S12	S12	S12	S12	S12	S12
Ambient	S12	S12	S12	S12	S12	S12

Two-Stroke-Cycle Gasoline Engine Lubricant Evaluation
D4857 (Y350M2) ASTM TC Sequence I Test Procedure
Remarks and Deviations

Form 8

Lab: CC	**EOT Date:** YYYYMMDD	**End Time:** HH:MM
Engine No.: CCCCC	**Run Number:** CCC	
Reference Oil CCCC

Two-Stroke-Cycle Gasoline Engine Lubricant Evaluation
D4857 (Y350M2) ASTM TC Sequence I Test Procedure
Phase II Air Fuel Ratio Plots

Form 9

Lab: CC	**EOT Date:** YYYYMMDD	**End Time:** HH:MM
Engine No.: CCCCC	**Run Number:** CCC	
Reference Oil CCCC

Two-Stroke-Cycle Gasoline Engine Lubricant Evaluation
D4857 (Y350M2) ASTM TC Sequence I Test Procedure
Phase II Spark Plug Plots
Form 10

Lab: CC	**EOT Date:** YYYYMMDD	**End Time:** HH:MM
Engine No.:	**Run Number:**	
Reference Oil CCCC

Two-Stroke-Cycle Gasoline Engine Lubricant Evaluation
D4857 (Y350M2) ASTM TC Sequence I Test Procedure
Test Fuel Analysis (Last Batch)

Form 11

Lab: CC	**EOT Date:** YYYYMMDD	**End Time:** HH:MM
Engine No.: CCCCC	**Run Number:** CCC	
Reference Oil CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		**Cylinder:** CS1
Non Reference Oil CCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCCC		**Cylinder:** CS1
Formulation / Stand Code: CC-CCCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC		
Supplier: CCCCCCCCCCCCCCCCCCC	**Batch Identifies:** CCCCCCCCCCCCCCCC	

Measurement	Specs.	Analysis	Test Method
Gravity, ˚API		S1.1	
Color		CCCCCCCC	
Doctor Test		CCCCCCCC	
Copper Corrosion, 3h @ 212 ˚F	1 Maximum	S123	D 130
Reid Vapor Pressure, psig		S1.1	
Research Octane Number		S1.1	
Motor Octane Number		S1.1	
Research + Motor / 2		S1.1	
Total Sulfur, % Weight	0.04 - 0.05	S1.12	D 2622
Gum, mg/100 mL		S1.1	
Oxidation Stability, min		S1234	
Lead, g/gal		S1.123	
Distillation, ˚C			
IBP	Report	S1234	D 86
10%	Report	S1234	D 86
50%	Report	S1234	D 86
90%	282 - 338	S1234	D 86
EP	Report	S1234	D 86
Recovery, %		S12.1	
Pona, % vol			
Paraffins + Napthenes		S12.1	
Olefin	Report	S12.1	D 1319
Aromatics % Vol.	28 - 33	S12.1	D 1319