TWO-STROKE-CYCLE GASOLINE ENGINE LUBRICANT EVALUATION

D4863 ASTM TC SEQUENCE II Test Procedure
Title / Validity Declaration Page

VERSION 20020830 BETA

CONDUCTED FOR
TSTSPON1
TSTSPON2

LABVALID	V = VALID
	I = INVALID

Test Number: TESTNUM

Reference		Non-Reference	
Primary Oil	CMIR	Primary Oil	OILCODE
EOT Date:	RDTCOMP	EOT Date:	DTCOMP
EOT Time:	REOTTIME	EOT Time:	EOTTIME

Alternate Codes: ALTCODE1 ALTCODE2 ALTCODE3

Test Stand: STAND Stand Run#: STRUN Lab Run #: LABRUN

Formulation/Stand Code: FORM

In my opinion this test OPVALID been conducted in a valid manner in accordance with the ASTM Test Method D4863 and the appropriate amendments through the information letter system. The remarks included in this report describe the anomalies associated with this test.

SUBMITTED BY: SUBLAB
Testing Laboratory

SUBSIGIM
Signature

SUBNAME
Typed Name

SUBTITLE
Title

TABLE OF CONTENTS

TWO-STROKE-CYCLE GASOLINE ENGINE LUBRICANT EVALUATION

D4863 ASTM TC SEQUENCE II Test Procedure

Objective

This procedure is a non-destructive test designed to evaluate the lubricity of a two-cycle engine lubricant. This characteristic is evaluated by measuring the decrease in torque caused by the increase in spark plug temperature.

Summary of Procedure

The engine employed is an air-cooled, single cylinder Yamaha CE50S engine with the following general specifications:

Displacement	3.0 cu. in. (49 cm^3)
Cylinder Bore	1.57 in. (40 mm)
Stroke	1.54 in. (39.2 mm)
Compression Ratio	7.2:1

The engine is assembled before each test using new piston, rings, piston pin, gaskets, and spark plug. Since piston to cylinder wall clearance is critical to this procedure, it is measured and corrected when necessary.

A two-hour cyclic break-in is completed before each test begins. During conditioning runs which precede tightenings, the engine is stabilized at the following conditions:

Engine, r/min	4000 ± 30
Engine Load	W.O.T.
Spark Plug Gasket Temp., ˚C	170 ± 1.1
Reference Fuel/Oil Ratio	150:1
Candidate Fuel/Oil Ratio	150:1

At a specified time, the cooling air is stopped and torque decrease (drop) is monitored as spark plug temperature rises. When the spark plug temperature reaches 350˚C, cooling air is restored.

This procedure is repeated five times in each of two sets on both the reference and non-reference lubricants. Additional tightenings are made if an apparent out-of-line measurement is found (as a difference > 0.75 lbs. in. between maximum and minimum values in each set). The reference lubricant is run first and the non-reference immediately follows. The runs are then repeated in the same order. Thus, when the test is completed, there are at least ten values of torque drop for both the reference and the non-reference lubricants.

Upon completion of the test, the data is analyzed according to the Practice E178 for identifying outliers and the student's "T" test for differences between means.

TWO-STROKE-CYCLE GASOLINE ENGINE LUBRICANT EVALUATION
D4863 ASTM TC SEQUENCE II

SUMMARY OF ENGINE TEST RESULTS
YAMAHA CE50S TIGHTENING TEST

Test Number:	TESTNUM	Fuel:	FUELSUP	Start Date:	DTSTRT
Stand Number:	STAND	Fuel/Oil Ratio:	FUELOILR	E.O.T. Date:	DTCOMP
Test Length:	TESTLEN	Fuel Batch ID:	FUELBTID		

Delta Torque, lbs. in.

Lubricant Code: CMIR Ind Bench: INDB Lab Code: RLABOCOD Tightening No.: TIGHNOS1

Temperature, ˚C	TIGHR1S1	TIGHR2S1	TIGHR3S1	TIGHR4S1	TIGHR5S1	TIGHR6S1	TIGHR7S1	Mean
300	D300R1S1	D300R2S1	D300R3S1	D300R4S1	D300R5S1	D300R6S1	D300R7S1	ADT300S1
325	D325R1S1	D325R2S1	D325R3S1	D325R4S1	D325R5S1	D325R6S1	D325R7S1	ADT325S1
350	D350R1S1	D350R2S1	D350R3S1	D350R4S1	D350R5S1	D350R6S1	D350R7S1	ADT350S1

Lubricant Code: OILCODE Ind: IND Lab Code: LABOCODE Tightening No.: TIGHNOS2

Temperature, ˚C	TIGHR1S2	TIGHR2S2	TIGHR3S2	TIGHR4S2	TIGHR5S2	TIGHR6S2	TIGHR7S2	Mean
300	D300R1S2	D300R2S2	D300R3S2	D300R4S2	D300R5S2	D300R6S2	D300R7S2	ADT300S2
325	D325R1S2	D325R2S2	D325R3S2	D325R4S2	D325R5S2	D325R6S2	D325R7S2	ADT325S2
350	D350R1S2	D350R2S2	D350R3S2	D350R4S2	D350R5S2	D350R6S2	D350R7S2	ADT350S2

Lubricant Code: CMIR Ind Bench: INDB Lab Code: RLABOCOD Tightening No.: TIGHNOS3

Temperature, ˚C	TIGHR1S3	TIGHR2S3	TIGHR3S3	TIGHR4S3	TIGHR5S3	TIGHR6S3	TIGHR7S3	Mean
300	D300R1S3	D300R2S3	D300R3S3	D300R4S3	D300R5S3	D300R6S3	D300R7S3	ADT300S3
325	D325R1S3	D325R2S3	D325R3S3	D325R4S3	D325R5S3	D325R6S3	D325R7S3	ADT325S3
350	D350R1S3	D350R2S3	D350R3S3	D350R4S3	D350R5S3	D350R6S3	D350R7S3	ADT350S3

Lubricant Code: OILCODE Ind: IND Lab Code: LABOCODE Tightening No.: TIGHNOS4

Temperature, ˚C	TIGHR1S4	TIGHR2S4	TIGHR3S4	TIGHR4S4	TIGHR5S4	TIGHR6S4	TIGHR7S4	Mean
300	D300R1S4	D300R2S4	D300R3S4	D300R4S4	D300R5S4	D300R6S4	D300R7S4	ADT300S4
325	D325R1S4	D325R2S4	D325R3S4	D325R4S4	D325R5S4	D325R6S4	D325R7S4	ADT325S4
350	D350R1S4	D350R2S4	D350R3S4	D350R4S4	D350R5S4	D350R6S4	D350R7S4	ADT350S4

Temperature, ˚C	CMIR Mean	OILCODE Mean
300	DT300RCM	DT300CCM
325	DT325RCM	DT325CCM
350	DT350RCM	DT350CCM

Previous Reference Data

Code	Date	Test Number	Mean
RDATAC1	RDATADT	RDATATN	RDATAC1M
RDATAC2			RDATAC2M
RDATAC3	RDATAD2	RDATTN2	RDATAC3M
RDATAC4			RDATAC4M

TWO-STROKE-CYCLE GASOLINE ENGINE LUBRICANT EVALUATION
D4863 ASTM TC SEQUENCE II

SUMMARY OF ENGINE TEST RESULTS
YAMAHA CE50S TIGHTENING TEST

Lubricant Code: OILCODE Test Number: TESTNUM E.O.T. Date: DTCOMP

Student T Test For Significance of Difference Between

	Benchmark	Non-Reference	
Code:	CMIR	OILCODE	
Lab Code:	RLABOCOD	LABOCODE	
Number of Data Points:	RDATAPTS	DATAPTS	
Mean:	RMEANVAL	MEANVAL	PASSFAIL
Std. Dev. (n-1):	RSTDVAL	STDVAL	
Outlier Tightening Numbers:	ROUTLIER	OUTLIER	
Variance:	RVARVAL	VARVAL	
Combined Estimate of Std. Dev:	COMBSTD		
Degrees of Freedom:	DEGFREE		
Critical Value t*:	CRITIC_T		
t Critical 0.05 (95% confidence):			
Confidence Level:	CONFID		

On the basis of the Student "T" test there is NOTSIGN a significant difference between the reference and non reference lubricants at the 95% confidence level.

t* is compared to the critical value of t, t critical, from table A4.1.

TABLE A4.1 Critical Values of the t -

Degrees of Freedom	Degrees of Confidence				
	90%	95%	97.5%	99%	99.5%
10	1.372	1.812	2.228	2..764	3.169
11	1.363	1.796	2.201	2.718	3.106
12	1.356	1.782	2.179	2.681	3.055
13	1.350	1.771	2.160	2.650	3.012
14	1.345	1.761	2.145	2.624	2.977
15	1.341	1.753	2.131	2.602	2.947
16	1.337	1.746	2.120	2.583	2.921
17	1.333	1.740	2.110	2.567	2.898
18	1.330	1.734	2.101	2.552	2.878
19	1.328	1.729	2.093	2.539	2.861
20	1.325	1.725	2.086	2.528	2.845
21	1.323	1.721	2.080	2.518	2.831
22	1.321	1.717	2.074	2.508	2.819
23	1.319	1.714	2.069	2.500	2.807
24	1.318	1.711	2.064	2.492	2.797
25	1.316	1.705	2.060	2.485	2.787
26	1.315	1.706	2.056	2.479	2.779
27	1.314	1.703	2.052	2.473	2.771
28	1.313	1.701	2.048	2.467	2.763
29	1.311	1.699	2.045	2.462	2.756
30	1.310	1.697	2.042	2.457	2.750

TWO-STROKE-CYCLE GASOLINE ENGINE LUBRICANT EVALUATION

SUMMARY OF ENGINE TEST RESULTS
YAMAHA CE50S TIGHTENING TEST

Lubricant Code: CMIR Lab Code: RLABOCOD Tightening No.: TIGHNOS1

Operating Parameters

Miscellaneous

Tightening No.	TIGHR1S1	TIGHR2S1	TIGHR3S1	TIGHR4S1	TIGHR5S1	TIGHR6S1	TIGHR7S1	Average
Seconds	SECSR1S1	SECSR2S1	SECSR3S1	SECSR4S1	SECSR5S1	SECSR6S1	SECSR7S1	ASECSS1
Fuel Flow, lb/h	FFLOR1S1	FFLOR2S1	FFLOR3S1	FFLOR4S1	FFLOR5S1	FFLOR6S1	FFLOR7S1	AFFLOS1
Horsepower, ft-lbf.	HPWRR1S1	HPWRR2S1	HPWRR3S1	HPWRR4S1	HPWRR5S1	HPWRR6S1	HPWRR7S1	AHPS1
Barometer Press., in. Hg	BARPR1S1	BARPR2S1	BARPR3S1	BARPR4S1	BARPR5S1	BARPR6S1	BARPR7S1	ABAROPS1

Temperature, ˚F

Ambient	AMBTR1S1	AMBTR2S1	AMBTR3S1	AMBTR4S1	AMBTR5S1	AMBTR6S1	AMBTR7S1	AAMBTS1
Wet	WETTR1S1	WETTR2S1	WETTR3S1	WETTR4S1	WETTR5S1	WETTR6S1	WETTR7S1	AWETTS1
Dry	DRYTR1S1	DRYTR2S1	DRYTR3S1	DRYTR4S1	DRYTR5S1	DRYTR6S1	DRYTR7S1	ADRYTS1
Dynamometer	DYNTR1S1	DYNTR2S1	DYNTR3S1	DYNTR4S1	DYNTR5S1	DYNTR6S1	DYNTR7S1	ADYNTS1
Intake Air	IAIRR1S1	IAIRR2S1	IAIRR3S1	IAIRR4S1	IAIRR5S1	IAIRR6S1	IAIRR7S1	AIAIRTS1
Fuel	FUELR1S1	FUELR2S1	FUELR3S1	FUELR4S1	FUELR5S1	FUELR6S1	FUELR7S1	AFUELTS1
Exhaust	EXGTR1S1	EXGTR2S1	EXGTR3S1	EXGTR4S1	EXGTR5S1	EXGTR6S1	EXGTR7S1	AEXHGTS1

Torque, lbf-in.

@ 170˚C	T170R1S1	T170R2S1	T170R3S1	T170R4S1	T170R5S1	T170R6S1	T170R7S1	AT170S1
@ 200˚C	T200R1S1	T200R2S1	T200R3S1	T200R4S1	T200R5S1	T200R6S1	T200R7S1	AT200S1
@ 300˚C	T300R1S1	T300R2S1	T300R3S1	T300R4S1	T300R5S1	T300R6S1	T300R7S1	AT300S1
@ 325˚C	T325R1S1	T325R2S1	T325R3S1	T325R4S1	T325R5S1	T325R6S1	T325R7S1	AT325S1
@ 350˚C	T350R1S1	T350R2S1	T350R3S1	T350R4S1	T350R5S1	T350R6S1	T350R7S1	AT350S1

Delta Torque, lbf-in.

@ 300˚C	D300R1S1	D300R2S1	D300R3S1	D300R4S1	D300R5S1	D300R6S1	D300R7S1	ADT300S1
@ 325˚C	D325R1S1	D325R2S1	D325R3S1	D325R4S1	D325R5S1	D325R6S1	D325R7S1	ADT325S1
@ 350˚C	D350R1S1	D350R2S1	D350R3S1	D350R4S1	D350R5S1	D350R6S1	D350R7S1	ADT350S1

TWO-STROKE-CYCLE GASOLINE ENGINE LUBRICANT EVALUATION
D4863 ASTM TC SEQUENCE II

SUMMARY OF ENGINE TEST RESULTS
YAMAHA CE50S TIGHTENING TEST

Lubricant Code: OILCODE Lab Code: LABOCODE Tightening No.: TIGHNOS2

Operating Parameters

Miscellaneous

Tightening No.	TIGHR1S2	TIGHR2S2	TIGHR3S2	TIGHR4S2	TIGHR5S2	TIGHR6S2	TIGHR7S2	Average
Seconds	SECSR1S2	SECSR2S2	SECSR3S2	SECSR4S2	SECSR5S2	SECSR6S2	SECSR7S2	ASECSS2
Fuel Flow, lb/h	FFLOR1S2	FFLOR2S2	FFLOR3S2	FFLOR4S2	FFLOR5S2	FFLOR6S2	FFLOR7S2	AFFLOS2
Horsepower, ft-lbf.	HPWRR1S2	HPWRR2S2	HPWRR3S2	HPWRR4S2	HPWRR5S2	HPWRR6S2	HPWRR7S2	AHPS2
Barometer Press., in. Hg	BARPR1S2	BARPR2S2	BARPR3S2	BARPR4S2	BARPR5S2	BARPR6S2	BARPR7S2	ABAROPS2

Temperature, ˚F

Ambient	AMBTR1S2	AMBTR2S2	AMBTR3S2	AMBTR4S2	AMBTR5S2	AMBTR6S2	AMBTR7S2	AAMBTS2
Wet	WETTR1S2	WETTR2S2	WETTR3S2	WETTR4S2	WETTR5S2	WETTR6S2	WETTR7S2	AWETTS2
Dry	DRYTR1S2	DRYTR2S2	DRYTR3S2	DRYTR4S2	DRYTR5S2	DRYTR6S2	DRYTR7S2	ADRYTS2
Dynamometer	DYNTR1S2	DYNTR2S2	DYNTR3S2	DYNTR4S2	DYNTR5S2	DYNTR6S2	DYNTR7S2	ADYNTS2
Intake Air	IAIRR1S2	IAIRR2S2	IAIRR3S2	IAIRR4S2	IAIRR5S2	IAIRR6S2	IAIRR7S2	AIAIRTS2
Fuel	FUELR1S2	FUELR2S2	FUELR3S2	FUELR4S2	FUELR5S2	FUELR6S2	FUELR7S2	AFUELTS2
Exhaust	EXGTR1S2	EXGTR2S2	EXGTR3S2	EXGTR4S2	EXGTR5S2	EXGTR6S2	EXGTR7S2	AEXHGTS2

Torque, lbf-in.

@ 170˚C	T170R1S2	T170R2S2	T170R3S2	T170R4S2	T170R5S2	T170R6S2	T170R7S2	AT170S2
@ 200˚C	T200R1S2	T200R2S2	T200R3S2	T200R4S2	T200R5S2	T200R6S2	T200R7S2	AT200S2
@ 300˚C	T300R1S2	T300R2S2	T300R3S2	T300R4S2	T300R5S2	T300R6S2	T300R7S2	AT300S2
@ 325˚C	T325R1S2	T325R2S2	T325R3S2	T325R4S2	T325R5S2	T325R6S2	T325R7S2	AT325S2
@ 350˚C	T350R1S2	T350R2S2	T350R3S2	T350R4S2	T350R5S2	T350R6S2	T350R7S2	AT350S2

Delta Torque, lbf-in.

@ 300˚C	D300R1S2	D300R2S2	D300R3S2	D300R4S2	D300R5S2	D300R6S2	D300R7S2	ADT300S2
@ 325˚C	D325R1S2	D325R2S2	D325R3S2	D325R4S2	D325R5S2	D325R6S2	D325R7S2	ADT325S2
@ 350˚C	D350R1S2	D350R2S2	D350R3S2	D350R4S2	D350R5S2	D350R6S2	D350R7S2	ADT350S2

TWO-STROKE-CYCLE GASOLINE ENGINE LUBRICANT EVALUATION
D4863 ASTM TC SEQUENCE II

SUMMARY OF ENGINE TEST RESULTS
YAMAHA CE50S TIGHTENING TEST

Lubricant Code: CMIR Lab Code: RLABOCOD Tightening No.: TIGHNOS3

Operating Parameters

Miscellaneous

Tightening No.	TIGHR1S3	TIGHR2S3	TIGHR3S3	TIGHR4S3	TIGHR5S3	TIGHR6S3	TIGHR7S3	Average
Seconds	SECSR1S3	SECSR2S3	SECSR3S3	SECSR4S3	SECSR5S3	SECSR6S3	SECSR7S3	ASECSS3
Fuel Flow, lb/h	FFLOR1S3	FFLOR2S3	FFLOR3S3	FFLOR4S3	FFLOR5S3	FFLOR6S3	FFLOR7S3	AFFLOS3
Horsepower, ft-lbf.	HPWRR1S3	HPWRR2S3	HPWRR3S3	HPWRR4S3	HPWRR5S3	HPWRR6S3	HPWRR7S3	AHPS3
Barometer Press., in. Hg	BARPR1S3	BARPR2S3	BARPR3S3	BARPR4S3	BARPR5S3	BARPR6S3	BARPR7S3	ABAROPS3

Temperature, ˚F

Ambient	AMBTR1S3	AMBTR2S3	AMBTR3S3	AMBTR4S3	AMBTR5S3	AMBTR6S3	AMBTR7S3	AAMBTS3
Wet	WETTR1S3	WETTR2S3	WETTR3S3	WETTR4S3	WETTR5S3	WETTR6S3	WETTR7S3	AWETTS3
Dry	DRYTR1S3	DRYTR2S3	DRYTR3S3	DRYTR4S3	DRYTR5S3	DRYTR6S3	DRYTR7S3	ADRYTS3
Dynamometer	DYNTR1S3	DYNTR2S3	DYNTR3S3	DYNTR4S3	DYNTR5S3	DYNTR6S3	DYNTR7S3	ADYNTS3
Intake Air	IAIRR1S3	IAIRR2S3	IAIRR3S3	IAIRR4S3	IAIRR5S3	IAIRR6S3	IAIRR7S3	AIAIRTS3
Fuel	FUELR1S3	FUELR2S3	FUELR3S3	FUELR4S3	FUELR5S3	FUELR6S3	FUELR7S3	AFUELTS3
Exhaust	EXGTR1S3	EXGTR2S3	EXGTR3S3	EXGTR4S3	EXGTR5S3	EXGTR6S3	EXGTR7S3	AEXHGTS3

Torque, lbf-in.

@ 170˚C	T170R1S3	T170R2S3	T170R3S3	T170R4S3	T170R5S3	T170R6S3	T170R7S3	AT170S3
@ 200˚C	T200R1S3	T200R2S3	T200R3S3	T200R4S3	T200R5S3	T200R6S3	T200R7S3	AT200S3
@ 300˚C	T300R1S3	T300R2S3	T300R3S3	T300R4S3	T300R5S3	T300R6S3	T300R7S3	AT300S3
@ 325˚C	T325R1S3	T325R2S3	T325R3S3	T325R4S3	T325R5S3	T325R6S3	T325R7S3	AT325S3
@ 350˚C	T350R1S3	T350R2S3	T350R3S3	T350R4S3	T350R5S3	T350R6S3	T350R7S3	AT350S3

Delta Torque, lbf-in.

@ 300˚C	D300R1S3	D300R2S3	D300R3S3	D300R4S3	D300R5S3	D300R6S3	D300R7S3	ADT300S3
@ 325˚C	D325R1S3	D325R2S3	D325R3S3	D325R4S3	D325R5S3	D325R6S3	D325R7S3	ADT325S3
@ 350˚C	D350R1S3	D350R2S3	D350R3S3	D350R4S3	D350R5S3	D350R6S3	D350R7S3	ADT350S3

TWO-STROKE-CYCLE GASOLINE ENGINE LUBRICANT EVALUATION
D4863 ASTM TC SEQUENCE II

SUMMARY OF ENGINE TEST RESULTS
YAMAHA CE50S TIGHTENING TEST

Lubricant Code: OILCODE Lab Code: LABOCODE Tightening No.: TIGHNOS4

Operating Parameters

Miscellaneous

Tightening No.	TIGHR1S4	TIGHR2S4	TIGHR3S4	TIGHR4S4	TIGHR5S4	TIGHR6S4	TIGHR7S4	Average
Seconds	SECSR1S4	SECSR2S4	SECSR3S4	SECSR4S4	SECSR5S4	SECSR6S4	SECSR7S4	ASECSS4
Fuel Flow, lb/hr	FFLOR1S4	FFLOR2S4	FFLOR3S4	FFLOR4S4	FFLOR5S4	FFLOR6S4	FFLOR7S4	AFFLOS4
Horsepower, ft-lbf/	HPWRR1S4	HPWRR2S4	HPWRR3S4	HPWRR4S4	HPWRR5S4	HPWRR6S4	HPWRR7S4	AHPS4
Barometer Press., in. Hg	BARPR1S4	BARPR2S4	BARPR3S4	BARPR4S4	BARPR5S4	BARPR6S4	BARPR7S4	ABAROPS4

Temperature, ˚F

Ambient	AMBTR1S4	AMBTR2S4	AMBTR3S4	AMBTR4S4	AMBTR5S4	AMBTR6S4	AMBTR7S4	AAMBTS4
Wet	WETTR1S4	WETTR2S4	WETTR3S4	WETTR4S4	WETTR5S4	WETTR6S4	WETTR7S4	AWETTS4
Dry	DRYTR1S4	DRYTR2S4	DRYTR3S4	DRYTR4S4	DRYTR5S4	DRYTR6S4	DRYTR7S4	ADRYTS4
Dynamometer	DYNTR1S4	DYNTR2S4	DYNTR3S4	DYNTR4S4	DYNTR5S4	DYNTR6S4	DYNTR7S4	ADYNTS4
Intake Air	IAIRR1S4	IAIRR2S4	IAIRR3S4	IAIRR4S4	IAIRR5S4	IAIRR6S4	IAIRR7S4	AIAIRTS4
Fuel	FUELR1S4	FUELR2S4	FUELR3S4	FUELR4S4	FUELR5S4	FUELR6S4	FUELR7S4	AFUELTS4
Exhaust	EXGTR1S4	EXGTR2S4	EXGTR3S4	EXGTR4S4	EXGTR5S4	EXGTR6S4	EXGTR7S4	AEXHGTS4

Torque, lbf-in.

@ 170˚C	T170R1S4	T170R2S4	T170R3S4	T170R4S4	T170R5S4	T170R6S4	T170R7S4	AT170S4
@ 200˚C	T200R1S4	T200R2S4	T200R3S4	T200R4S4	T200R5S4	T200R6S4	T200R7S4	AT200S4
@ 300˚C	T300R1S4	T300R2S4	T300R3S4	T300R4S4	T300R5S4	T300R6S4	T300R7S4	AT300S4
@ 325˚C	T325R1S4	T325R2S4	T325R3S4	T325R4S4	T325R5S4	T325R6S4	T325R7S4	AT325S4
@ 350˚C	T350R1S4	T350R2S4	T350R3S4	T350R4S4	T350R5S4	T350R6S4	T350R7S4	AT350S4

Delta Torque, lbf-in.

@ 300˚C	D300R1S4	D300R2S4	D300R3S4	D300R4S4	D300R5S4	D300R6S4	D300R7S4	ADT300S4
@ 325˚C	D325R1S4	D325R2S4	D325R3S4	D325R4S4	D325R5S4	D325R6S4	D325R7S4	ADT325S4
@ 350˚C	D350R1S4	D350R2S4	D350R3S4	D350R4S4	D350R5S4	D350R6S4	D350R7S4	ADT350S4

TWO-STROKE-CYCLE GASOLINE ENGINE LUBRICANT EVALUATION

D4863 ASTM TC SEQUENCE II

Test Oil Code: CMIR	**Test Number:** TESTNUM	**EOT Date:** DTCOMP

Total Number of Remarks or Deviations OPROCR

Remark or Deviation

OCOMR001

TWO-STROKE-CYCLE GASOLINE ENGINE LUBRICANT EVALUATION

D4863 ASTM TC SEQUENCE II

Test Fuel Analysis (Last Batch)

Lab: LAB	**EOT Date:** DTCOMP	**End Time:** EOTTIME
Stand: STAND	**Run Number:** ENRUN	
Formulation / Stand Code: FORM		
Supplier: FUELSUP	**Batch Identifier:** FUELBTID	

Measurement	Specs.	Analysis	Test Method
Gravity, ˚API		APIGRNEW	
Color		FUELCOL	
Doctor Test		FUELDRT	
Copper Corrosion, 3 h @ 212 ˚F	1 Maximum	FUELCU	D 130
Reid Vapor Pressure, psig		FUELREID	
Research Octane Number		ROCTANEN	
Motor Octane Number		MOCTANEN	
(Research + Motor) / 2		RMOTOR2	
Total Sulfur, % Weight	0.04 - 0.05	FUELSNEW	D 2622
Gum, mg/100 mL		FUELGUM	
Oxidation Stability, min		FUELOXS	
Lead, g/gal		FUELPB	
Distillation, ˚C			
IBP	Report	FUELIBP	D 86
10%	Report	FUEL10	D 86
50%	Report	FUEL50	D 86
90%	282 - 338	FUEL90	D 86
EP	Report	FUELEP	D 86
Recovery, %		FUELRECO	
Pona, % vol			
Paraffins + Napthenes		FUELPN	
Olefin	Report	FUELOLEF	D 1319
Aromatics % Vol.	28 - 33	FUELAROM	D 1319