

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

Lab: CC	EOT Date: YYYYMMDD	End Time: HH:MM
Engine No.: CCCCCCCCCC	Run Number: CCC	
Reference Oil	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	Cylinder: CCCCCCS1
Non Reference Oil	CCCCCCCCCCCCCCCCCCCCCCCCCCCCCC	Cylinder: CCCCCCS1
Formulation / Stand Code: CC-CCCCCCCCC-C-C-CCCCCC-CC-CC-CCCC		

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Ring Ratings

Form 6

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

Cylinder Number	Ring Number	NMMA Rating	-1.85 Correction Factor ^A	Visual Rating	Adjusted Rating ^B
S1	S1	S12.12	S1.12	S12.12	S12.12
S1	S1	S12.12	S1.12	S12.12	S12.12
S1	S1	S12.12	S1.12	S12.12	S12.12
S1	S1	S12.12	S1.12	S12.12	S12.12
S1	S1	S12.12	S1.12	S12.12	S12.12
S1	S1	S12.12	S1.12	S12.12	S12.12

^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 through the application of varying amounts of pressure.

**Two-Stroke-Cycle Gasoline Engine Lubricant Evaluation
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Operational Summary
Form 7**

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

Parameters	Phase I			Phase II		
	Maximum	Minimum	Average	Maximum	Minimum	Average
Engine Speed, r/min	S1234	S1234	S1234	S1234	S1234	S1234
Dynamometer Speed, r/min	S1234	S1234	S1234	S1234	S1234	S1234
Observed Load, hp	S12.12	S12.12	S12.12	S12.12	S12.12	S12.12
Corrected Load, hp	S12.12	S12.12	S12.12	S12.12	S12.12	S12.12
Air / Fuel Ratio - Baseline	S12.12	S12.12	S12.12	S12.12	S12.12	S12.12
Air / Fuel Ratio - Test Oil	S12.12	S12.12	S12.12	S12.12	S12.12	S12.12
Air Flow lb / h - Baseline	S12.12	S12.12	S12.12	S12.12	S12.12	S12.12
Air Flow lb / h - Test Oil	S12.12	S12.12	S12.12	S12.12	S12.12	S12.12
Fuel Flow lb / h - Baseline	S1.12	S1.12	S1.12	S1.12	S1.12	S1.12
Fuel Flow lb / h - Test Oil	S1.12	S1.12	S1.12	S1.12	S1.12	S1.12
Pressures						
Fuel Pressure, psi - Baseline	S1.12	S.12	S1.12	S1.12	S1.12	S1.12
Fuel Pressure, psi - Test Oil	S1.12	S1.12	S1.12	S1.12	S1.12	S1.12
Intake Air Pressure, in. H ₂ O	S1.123	S1.123	S1.123	S1.123	S1.123	S1.123
Barometric Pressure, in. Hg	S12.12	S12.12	S12.12	S12.12	S12.12	S12.12
Temperatures, ° F						
Spark Plug - Baseline	S123	S123	S123	S123	S123	S123
Spark Plug - Test Oil	S123	S123	S123	S123	S123	S123
Cylinder Liner - Baseline	S123	S123	S123	S123	S123	S123
Cylinder Liner- Test Oil	S123	S123	S123	S123	S123	S123
Exhaust - Baseline	S1234	S1234	S1234	S1234	S1234	S1234
Exhaust - Test Oil	S1234	S1234	S1234	S1234	S1234	S1234
Fuel - Baseline	S12	S12	S12	S12	S12	S12
Fuel - Test Oil	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
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Test Fuel Analysis (Last Batch)

Form 11

Lab: CC	EOT Date: YYYYMMDD	End Time: HH:MM
Engine No.: CCCCCCCCC	Rig No.: CCC	
Reference Oil: CCC	Industry Oil Code: CCCCCC	Cylinder: S1
Non Reference Oil: CCC		Cylinder: S1
Formulation / Stand Code: CC-CCCCCCCCC-C-C-CCCCCC-CC-CC-CCCCC		
Supplier: CCCCCCCCCCCCCCCCCCCCC	Batch Identifier: CCCCCCCCCCCCCCCCC	

Measurement	Specs.	Analysis	Test Method
Gravity, °API		S12.1	
Color		CCCCCCCC	
Doctor Test		CCCCCCCC	
Copper Corrosion, 3h @ 212 °F	1 Maximum	S123	D 130
Reid Vapor Pressure, psig		S1.1	
Research Octane Number		S12.1	
Motor Octane Number		S12.1	
(Research + Motor) / 2		S12.1	
Total Sulfur, % Weight	0.04 - 0.05	S1.1234	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