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Bio-SynXtra™ Marine 2 Cycle Engine Oil

(High performance Universal Water and Air cooled 2 cycle engine oil)

"Biobased Lubricants that Perform Like Synthetics"

Bio-SynXtra™ Marine 2 Cycle Engine Oil is a patented, readily biodegradable[1], biobased synthetic formula, that meets and exceeds the EPA-VGP, National Marine Manufacturers Association (NMMA) requirements for TC-W3™ Water-Cooled 2T Outboard Engines, and API TC+ for high performance air cooled engines. It replaces NMMA obsolete Water-Cooled TC-W (BIA), TC-WII for older outboard water-cooled engines, and NMMA TC-W3™ newer outboard water-cooled engines requirements. This high performance 2-Cycle formula provides additional antiwear/anti-scuffing protection and is recommended for use in lawn and garden equipment, chain saws, snow blowers, motor scooters, mopeds, snowmobiles and outboard water-cooled engines. **TC-W3™ is a registered trademark / specification of the NMMA.**

Bio-SynXtra™ Marine 2 Cycle Engine Oil contains enhanced lubricity boosters and additional cleanliness chemistry that improves lubrication performance for high output Motorcycle API TC, Husqvarna Chain Saw 242/266 and Meets or Exceeds TC-W3 outboard water-cooled engine requirements. It is specifically formulated to reduce visible smoke and burn clean, minimizing deposits and carbon buildup, and preventing ring sticking and spark plug fouling. In addition, this technology minimizing deposits and carbon buildup in equipment operating at high and low RPMs.

Bio-SynXtra™ Marine 2 Cycle Engine Oil is recommended in both carbureted and Direct Fuel Injected (DFI) systems. This ashless, Low-Smoke Formula contains **Stabilized*** Technology to improve fuel stability.

For premixed fuel-oil systems, see owner's manual for recommended fuel: oil ratio.

Typical Characteristics

Property	Typical Value	Method
Viscosity, cSt 100°C	8.0	ASTM D-445
Flash point, °C	185	ASTM D-93
Pour point, °C	-42	ASTM D-97
TBN (mg KOH/g)	6.0	ASTM D-2896
TC-W3 Program Summary		
Bench Tests		**Method Pass/Fail Criteria**
Cloud point, °C	-29	ASTM D-2500
Compatibility	clear	NMMA_CTCW homogeneous after mixed separately with each reference oil and stored 48 hours
Brookfield (fluidity) cP		
@ -25°C	5130	ASTM D-2988
Evaluation	Pass	less than 7500 cP
Miscibility (inversions @ -25°C)		ASTM D-4682/#992
Candidate/reference	50/85	no more than 10% inversions
Evaluation	Pass	than reference*
Rust test, %		NMMA Procedure
Candidate/reference	0/3.6	equal to or better than reference*
Evaluation	Pass	
Filterability, % Change,	5.37	NMMA_FPT Procedure
Candidate/Evaluation	Pass	decrease in flow not greater than 20%
Lubricity Test	Pass	AF-27

[1] Readily Biodegradable >60% within 28 days according to ASTM D 5864

***STABILIZED by Renewable Lubricants* is RLI's trademark on their proprietary and patented anti-oxidant, anti-wear, and cold flow technology. High Oleic Base Stock (HOBS) are agricultural vegetable oils. This Stabilized technology allows the HOBS to perform as a high performance formula in high and low temperature applications, reducing oil thickening and deposits.

2-CYCLE ENGINE OIL PROGRAM SUMMARY

TYPICAL ENGINE TEST RESULTS:

OMC 40 Horsepower Test (100 hours)		Not lower than 0.6 below same ratings
Average Piston Varnish, Candidate/Reference		of reference**
Top Ring Stick, Candidate/Reference		
Evaluation		
OMC 70 Horsepower Test (100 hours)		Equal to or better than some ratings
Average Piston Deposits, Candidate/Reference		of reference**
Second Ring Stick, Candidate/Reference		
Evaluation		
Mercury 15 Horsepower Test (100 hours)	100 hours	100 hours with no stuck rings, plus
Scuffing, Candidate Evaluation	Pass	a) scuffing within allowable limits (30%)
Bearing Stickiness, Candidate Evaluation	Pass	b) needles must fall easily from wrist pin
Compression Loss, Candidate Evaluation	Pass	c) 20 psi maximum compression loss
Overall Candidate Evaluation	Pass	(reference** run every 5 candidate runs)
Yamaha CE50S Tightening/Lubricity Test		Equal to or better than reference** within
Torque Drop, lb-in. Candidate/Reference/Eval.	4.16 / 4.26 / Pass	90% confidence level
Yamaha CE50S Preignition Test (100 hours)		Equal to or better than reference**
Major Preignitions, Candidate/Reference/Eval.		

Reference ** OS250541

Availability	F.O.B.: Hartville, Ohio, USA	Quart	Gallon	Pail	Drum	Totes	Bulk
	Product Item #	85201	85203	85204	85206	85207	85207