

Bio-SynXtra™ Marine 2 Cycle Engine Oil

Biobased, High-Performance Oil for Air- and Water-Cooled 2-Stroke Engines

Bio-SynXtra™ Marine 2 Cycle Engine Oil is a patented, readily biodegradable, biobased synthetic lubricant designed for high-performance 2-stroke engines. It meets and exceeds NMMA TC-W3™ requirements for water-cooled outboard engines and API TC+ for high-output air-cooled engines. Ideal for use in marine, recreational, and small engine applications, this universal ashless formulation delivers enhanced lubricity, reduced smoke, and excellent cleanliness; while minimizing deposits, scuffing, and spark plug fouling.

Benefits

- Readily biodegradable, environmentally non-toxic, not bioaccumulative
- Meets and exceeds NMMA TC-W3™ and API TC+ performance standards
- Replaces obsolete NMMA TC-W and TC-WII specifications
- High-performance anti-wear and anti-scuffing chemistry
- Minimizes carbon deposits, ring sticking, and spark plug fouling
- Ashless formulation for low-smoke, clean-burning performance
- Compatible with Direct Fuel Injection (DFI) and carbureted systems
- Reduces visible smoke and exhaust emissions
- Stabilized™ Technology improves fuel and oil stability
- Ideal for air-cooled and water-cooled applications including outboards, snowmobiles, chainsaws, scooters, and more

Application / New Filling

Recommended for use in:

- Outboard 2-stroke water-cooled marine engines (NMMA TC-W3™)
- High-performance air-cooled 2-stroke engines (API TC+, Husqvarna, Yamaha CE50S, etc.)
- Snowmobiles, scooters, mopeds, lawn and garden equipment, chain saws, and blowers
- Suitable for both premix and oil-injected systems (follow OEM ratios)

Meets or Exceeds:

- NMMA TC-W3™ (registered trademark/specification)
- API TC+
- OMC, Mercury, Yamaha, Husqvarna test protocols
- ASTM and NMMA test standards for lubricity, rust, filterability, miscibility, and deposit control

STABILIZED™
by Renewable Lubricants

Specifications and Approvals

- ASTM D 5864 Ultimately Biodegradable
- OECD 301B Readily Biodegradable
- Stabilized™ HOBS Technology: U.S. Patents 6,383,992 and 6,534,454 (others pending)

Typical Specifications		
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		Method Pass/Fail Criteria
Bench Tests		
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

Availability F.O.B.: Hartville, Ohio, USA	1 Quart	1 Gallon	5 Gallon	Drum	Totes	Bulk
RLI Product Item #	85201	85203	85204	85206	85207	85209

TYPICAL ENGINE TEST RESULTS:		
OMC 40 Horsepower Test (100 hours) Average Piston Varnish, Candidate/Reference Top Ring Stick, Candidate/Reference Evaluation		Not lower than 0.6 below same ratings of reference**
OMC 70 Horsepower Test (100 hours) Average Piston Deposits, Candidate/Reference Second Ring Stick, Candidate/Reference Evaluation		Equal to or better than some ratings of reference**
Mercury 15 Horsepower Test (100 hours) Scuffing, Candidate Evaluation Bearing Stickiness, Candidate Evaluation Compression Loss, Candidate Evaluation Overall Candidate Evaluation	100 hours Pass Pass Pass Pass	100 hours with no stuck rings, plus a) scuffing within allowable limits (30%) b) needles must fall easily from wrist pin c) 20 psi maximum compression loss (reference** run every 5 candidate runs)
Yamaha CE50S Tightening/Lubricity Test Torque Drop, lb-in. Candidate/Reference/Eval.	4.16 / 4.26 / Pass	Equal to or better than reference** within 90% confidence level
Yamaha CE50S Preignition Test (100 hours) Major Preignitions, Candidate/Reference/Eval.		Equal to or better than reference**
Reference ** OS250541		