



# Lubricants Report



## Product Data Sheet from Shell Lubricants

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### NAUTILUS® PREMIUM OUTBOARD MOTOR OIL

#### PRODUCT LINE

Shell Canada, for years the proven lubricants leader in all two cycle, water cooled outboard engines with: **Nautilus, now introduces a new** formulation that goes beyond the latest TC-W3 performance standard issued by the NMMA to improve outboard engine life. **Nautilus** is designed to meet all outboard engine manufactures performance requirements for pre-mix, direct oil injection, and newer generation direct injection two cycle engines.

#### APPLICATIONS

The last decade has seen a gradual increase in the average horsepower produced by outboard engines, the introduction of fuel and lubricant injection systems, the phasing out of leaded fuels along with trends to higher fuel to oil ratios. More recently, new challenges such as smoke emissions and environmental concerns have come to the forefront. In addition, today's outboard engines must be able to withstand the effects of higher speed and much higher temperatures.

In response to the needs of outboard engine manufacturers, the NMMA defined the TC-W3 standard of performance. This standard, is designed to increase the quality of lubricants available to the industry and the public. This new standard of quality will result in longer, trouble-free engine life by offering vastly improved lubricity and anti-scuffing protection over the former TC-W II specification. In addition, superior dispersants ensure peak engine performance by keeping pistons clean and free of deposits.

**Nautilus** is formulated and tested to exceed the NMMA TC-W3 standard. To the boating enthusiasts, **Nautilus** provides the ultimate in protection and performance in all water cooled, two cycle outboard engines.

#### PERFORMANCE BENEFITS

- **National Marine Manufacturers Association (NMMA) Approval** - **Nautilus** has exceeded the recertification requirements of the severe TC-W3 standard.
- **Meets All Major Outboard Engine Manufacturers Recommendations** - **Nautilus** is specifically designed to meet the requirements of all major outboard engine manufacturers and provides performance demanded in their "own brand" TC-W3 oil. In addition, it meets the requirements of all other manufacturers requiring TC-W, TC-W II or TC-W3 quality lubricant. **Nautilus** is recommended for use in outboard engines manufactured by:
  - Bombardier (formerly O.M.C.) - the manufacturers of Johnson and Evinrude
  - Mercury Marine
  - Yamaha
  - Suzuki
  - Nissan
- **Low Aquatic Toxicity** - Through the use of unique additive chemistry **Nautilus** has proven to be more environmentally friendly than most other 2 cycle motor oils.
- **Reduced Spark Plug Fouling and Preignition** - Its state of the art "ashless" formulation minimizes the combustion chamber deposits which cause spark plug fouling and preignition.
- Reduced deposits result in enhanced performance and durability of the engine while eliminating the risk of preignition-induced engine damage.

- **Minimized Piston Deposits** - Superior dispersants enable the oil to help keep pistons clean and avoid ring sticking to ensure peak performance engine operation and lower maintenance costs.
- **Improved Lubricity/Scuffing Protection**- With its exclusive chemistry, Nautilus provides exceptional lubrication protection at higher temperatures in today's high powered, hard working outboard engines.
- **Superior Rust Protection** - Superb anti-rust additives help prevent rusting of critical engine parts during operation and storage for longer engine life.
- **Designed to Perform with Unleaded Fuels at Fuel to Oil Ratios up to 100:1** - Proven Shell performance when used in accordance with manufacturers recommended lubrication practices.
- **Reduced Smoke Emissions** - New Nautilus formulation responds to environmental concerns shared by all boating enthusiasts, by meeting the latest JASO FC smoke emission standard.
- **Blends Easily and Stays Mixed in Cold Temperatures** - It exceeds the requirements of an SAE FM 4 at -40&deg;C for outstanding lubrication protection.
- **Compatibility** - Nautilus is fully compatible with all other TC-W3 and TC-W II lubricants to eliminate any risk of operating mishaps.
- **Dyed Blue for Pre-mix Systems** - Nautilus contains an easily seen blue dye as a safety check - if it's blue it's blended.

## TYPICAL PROPERTIES

Product Code	427-531	ASTM METHOD
API Rating	TC	-
NMMA Rating	TC-W3	-
SAE Fluidity/Miscibility grade	FM 4	-
Density @ 15°C kg/m <sup>3</sup>	863	D 1298
Colour	Blue	Visual
Pour Point, °C	-48	D 97
Flash Point PMCC, °C min.	65	D 93
Viscosity		
- cSt @ 40°C, mm <sup>2</sup> /s	33.1	D 445
- cSt @ 100°C,mm <sup>2</sup> /s	6.8	D 445
Brookfield @ -40°C, mPa.s	12,354	D 2983
Neutralization Value - TBNe,mg KOH/g	9.3	D 2896

[Visit](#) your nearest Shell Associate or 90 Reseller for more details.

Need more product information? Please the [Shell Helps Centre Technical Desk](#) at 1-800-661-1600 or e-mail us at [questions@shell.com](mailto:questions@shell.com)

MSDS requests? Please call 1(403)691-2615 or fax your request to 1(403)691-3321.

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  - \*\* TC-W is a registered trademark of the Boating Industry Association.