



# Clarity<sup>®</sup> Marine Lubricants



Environmentally responsible lubricants for fleet operators



The maritime environment is challenging to equipment. Long hours, heavy loads, extreme weather and the constant risk of contamination all contribute to difficult operating conditions. Downtime is inevitable. And when your equipment is down, so is your bottom line.

With one of the largest distribution networks in the industry, Chevron has the infrastructure to deliver the lubrication products and services you need whenever and wherever you need them. From our global operational reach to the depth of our experienced personnel, we stand for one thing above all else: **reliability**.



Chevron's Clarity® Marine Lubricants deliver the benefits of environmental responsibility and dependable high performance.

## Clarity® Marine Lubricants

Public opinion and government regulation have driven a new global focus on **environmental responsibility**.

Many maritime companies intend to improve their environmental footprint, but have been unwilling to accept the traditional compromises — in additional operating costs or reduced performance — necessary to achieve 'green' operation.

### Chevron's Solution

Clarity Marine Lubricants strike the perfect balance between environmental responsibility and operational cost.

These **inherently biodegradable lubricants** are created with Chevron's proprietary highly refined base oils and advanced ashless additive technology. The Clarity line provides exceptional oxidation stability, water separability, foam suppression and protection against wear, rust and corrosion.

In a perfect world, stern tube seals would perform without fail, deck hydraulic systems would never 'blow a hose', and deck gear boxes would never leak.

**Is 'Zero Spills' possible?**

Chevron believes that with corporate policy guidelines, constant vigilance from ship's personnel and best-in-class maintenance programs, 'Zero Spills' is an attainable goal. But in view of the serious environmental and economic risks, we believe it is prudent to mitigate the damaging potential of oil spillage through the use of non-toxic lubricants like Clarity® Synthetic Hydraulic Oil AW and Clarity Machine Oil.

**Environmentally sensitive**

Clarity Marine Lubricants are non-toxic to aquatic species as determined by LC50 testing of this or similar formulations. They are also inherently biodegradable, minimizing long-term environmental concerns.

**Premium performance**

Clarity's ashless formulation meets or exceeds most major manufacturers' requirements for viscosity, wear protection, water separability, foam inhibition, rust and corrosion protection, hydrolytic stability, and filterability.



**Environmental Responsibility: Clarity Lubricants vs. Ester Based Synthetics**

Environmental Impact Criteria	Clarity Lubricants	Typical Current Synthetics
Feed stock	Petroleum based feed stock	Animal & petroleum based feed stocks
Relative energy required to create	Low	Moderate to high
Biodegradability label	Inherently	Readily
Aquatic toxicity (EC50/LC50/IC50)	Pass	Pass
Oxidation stability – Expected lubricant service life	Extended interval	Extended interval
Lubricity	High	High
Seal compatibility	Pass	Pass
Compatibility with mineral based lubricants	Excellent	Good
Ease of recycling used product	Easy	Moderate to difficult
Relative ease of onboard inventory management and ordering	Easy	Moderate to difficult
Relative cost to implement	Low	Moderate to high

Test data shows that Chevron's Clarity Marine Lubricants deliver premium performance and are non-toxic to aquatic species\*.

**Clarity Machine Oils** — available in ISO 100, 150, 220, and 320 — are the

next generation lubricants for stern tube, thruster and deck equipment gear drives. These oils have gear oil EP characteristics to minimize wear, yet do not contain corrosive active sulphur additives. Their outstanding oxidation stability minimizes deposit formation.

**Clarity Synthetic Hydraulic Oil AW** — available in SAE 10W-20 — is specifically designed for deck equipment hydraulic systems and general oil. The anti-wear performance of these oils makes them especially suited for high-performance marine applications.

## Typical Test Data, Selected Clarity Marine Lubricants

Viscosity Grade	Clarity Machine Oils				Clarity Hydraulic Oils AW
	ISO 100	ISO 150	ISO 220	ISO 320	SAE 10W-20
AGMA Grade	3 EP	4 EP	5 EP	6 EP	—
Viscosity, Kinematic cSt at 40°C	95	143	209	304	36.4
Viscosity, Kinematic cSt at 100°C	11.3	14.6	18.4	23.5	7.5
Viscosity Index	105	101	97	98	180
Flash Point, °C	276	246	249	248	232
Pour Point, °C	-15	-15	-15	-12	-47
FZG Failure Load Stage, DIN 51354	>12	>12	>12	>12	12
Rust Prevention, ASTM D 665 Procedure B	Pass	Pass	Pass	Pass	Pass
Oxidation Stability					
Hours to 2.0 mg KOH/g acid number, ASTM D 943	4,500	4,500	4,000	3,000	> 18,000
Minutes to 25 psi pressure drop, ASTM D 2272	357	367	375	345	675
<b>*Aquatic Toxicity —</b> <i>Tested with fingerling rainbow trout and Mysid shrimp using a Water Accommodated Fraction at 5000 mg/liter (five times the minimum pass rate of the LC50 test)</i>	<b>ZERO MORTALITY OR TOXICITY AFTER FOUR DAYS</b>				

Typical test data are average values only. Minor variations which do not affect product performance are to be expected in normal manufacturing.

When used together with our Clarity Marine Lubricants, our **FAST™** and **DOT.FAST®** oil analysis programs help you achieve longer equipment life and extended drain intervals. By understanding the changing environment

within a piece of equipment, you can precisely schedule preventive maintenance that can reduce or even eliminate unplanned downtime. Chevron offers the marine industry a complete range of high-performance

products — including greases, cooling water treatments, hydraulic oils, rust proofing compounds, gear and compressor oils — specifically formulated for the challenges of the marine environment.

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