



# CLARITY<sup>®</sup> HYDRAULIC OIL AW

## 22, 32, 46, 68, 100

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### PRODUCT DESCRIPTION

Clarity<sup>®</sup> Hydraulic Oils AW are designed to give excellent protection in mobile and stationary hydraulic vane-, piston-, and gear-type pumps and in high-performance industrial applications as well as in environmentally sensitive areas.

- Excellent low temperature pumpability — ISO 22 grade specifically developed to ensure good low temperature fluidity for low temperature operations as low as -40°C (-40°F).
- Zinc-free/Ashless — Suited for applications involving yellow metals found in piston pumps.

### CUSTOMER BENEFITS

Clarity Hydraulic Oils AW deliver value through:

- Premium performance — Ashless formulation meets or exceeds major vane, piston and gear pump manufacturer's requirements for viscosity, rust and corrosion protection, hydrolytic stability, water separability, foam inhibition, and filterability.
- Exceptional oxidation stability — Longer service life than conventional zinc-based antiwear hydraulic oils or vegetable hydraulic oils.
- Excellent antiwear properties — Provides excellent wear protection.
- Low toxicity — Inherently biodegradable<sup>1</sup> and has very low acute aquatic toxicity to both fish and invertebrates based on tests of water accommodated fractions. Ashless formulation facilitates conventional recycling programs.

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1. As determined by OECD 301D (Closed Bottle Biodegradability Test), Chevron Clarity Hydraulic Oil AW was shown to be inherently biodegradable. This test is normally run for 28 days. After completing this test period, Chevron Clarity Hydraulic Oil AW was 38% degraded. Degradation of 20-59% after 28 days in OECD 301D is evidence that a product is inherently biodegradable. Chevron Clarity Hydraulic Oil AW did not meet the criteria for readily biodegradable, which is degradation of  $\geq 60\%$  after 28 days in OECD 301D.

Product(s) manufactured in the USA.

Always confirm that the product selected is consistent with the original equipment manufacturer's recommendation for the equipment operating conditions and customer's maintenance practices.

A Chevron company product

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## FEATURES

Clarity Hydraulic Oils AW are formulated with premium base oil technology and an ashless (“zinc-free”) additive system that provides exceptional oxidation stability, water separability, foam suppression, and protection against wear, rust and corrosion. They are designed to meet or exceed the performance requirements of conventional antiwear hydraulic oils, especially in severe, high-output applications such as axial piston pumps. The antiwear performance of these oils makes them especially suited for high performance industrial applications utilizing axial piston pumps where pressures may exceed 5000 psi.

The zinc-free formula makes it well suited for applications involving yellow metals found in hydraulic systems.

Clarity Hydraulic Oils AW are long-life lubricants (are not vegetable oil based), with dramatically longer TOST (ASTM D943 oxidation stability test) lives than conventional zinc-based hydraulic fluids. A longer TOST life equates to longer service life, which can improve the customer’s bottom line. This level of oxidation stability is especially applicable in high efficiency (high speed, high temperature, high output) applications where severe stress is placed on the hydraulic fluid.

Clarity Hydraulic Oil AW 22 and 100 are shear-stable high VI hydraulic oils designed to improve equipment efficiency and increase operating temperature range of the applicable grade.

Many hydraulic systems are required to operate in environmentally sensitive areas where leaks or spills of hydraulic fluid may result in contamination of the soil or nearby waterways. Conventional antiwear hydraulic oils are formulated with metal-containing performance additives which can persist in the environment in the event of leaks. Vegetable-based hydraulic oils generally meet the environmental requirements, but can fall short of the performance requirements.

## APPLICATIONS

Clarity® Hydraulic Oils AW are designed for use in mobile and stationary hydraulic vane-, piston-, and gear-type pumps.

Clarity Hydraulic Oils AW have shown excellent performance in applications involving servo-valves using multimetal components.

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Clarity Hydraulic Oils AW meet the requirements of:

- ASTM D6158 HM (ISO 32, 46, 68), HV (ISO 22, 100)
- Denison HF-0, HF-2 testing requirements of T5D (ISO 32, 46, 68)
- DIN 51524-2 (ISO 32, 46, 68)
- DIN 51524-3 (ISO 22, 100)
- Eaton-Vickers for use in M-2950-S (mobile) and I-286-S (stationary) hydraulic systems. Passes Eaton-Vickers 35VQ25 pump test. (ISO 32, 46, 68)
- ISO 11158 L-HV (ISO 22, 100)
- MAG Cincinnati, Cincinnati Machine P-68 (ISO 32), P-70 (ISO 46), P-69 (ISO 68)

Clarity Hydraulic Oil AW 100 is approved for Stern tube applications by:

- Blohm+Voss
- Wärtsilä-Japan

Clarity Hydraulic Oils AW (ISO 32, 46, 68) are registered by NSF and are acceptable as a lubricant where there is no possibility of food contact (H2) in and around food processing areas. The NSF Nonfood Compounds Registration Program is a continuation of the USDA product approval and listing program, which is based on meeting regulatory requirements of appropriate use, ingredient review and labeling verification.

Clarity Hydraulic Oils AW are not compatible with zinc/calcium containing fluids, and OEM recommended lubricant change-out procedures including drain and flush requirements need to be adhered to.

Do not use in high pressure systems in the vicinity of flames, sparks and hot surfaces. Use only in well ventilated areas. Keep container closed.

## TYPICAL TEST DATA

ISO Grade	22	32	46	68	100
Product Number	255694	230342	230341	230340	255702
SDS Number	32409	6691	6691	6691	6691
API Gravity	37.1	32.8	31.9	31.8	31.8
Viscosity, Kinematic cSt at 40°C cSt at 100°C	22.6 5.3	33.6 5.6	46.0 6.8	64.6 8.5	95.0 13.8
Viscosity, Saybolt SUS at 100°F SUS at 210°F	117 44.0	173 45.0	237 49.0	334 54.8	486 74.6
Viscosity Index	180	104	101	102	145
Flash Point, °C(°F)	200(392)	222(432)	224(435)	224(435)	266(511)
Pour Point, °C(°F)	-52 (-62)	-33(-27)	-30(-22)	-30(-22)	-40(-40)
Brookfield Viscosity, ASTM D2983, cP at -20°C	630	—	—	—	—
Brookfield Viscosity, ASTM D2983, cP at -30°C	1680	—	—	—	—
Brookfield Viscosity, ASTM D2983, cP at -40°C	6280	—	—	—	—
Oxidation Stability Hours to 2.0 mg KOH/g acid number, ASTM D943	> 10,000	> 18,000 <sup>a</sup>	> 18,000 <sup>a</sup>	> 18,000 <sup>a</sup>	> 5,000
FZG Gear Test, DIN 51354, Fail Stage	—	12	≥12	≥12	—
Acute Aquatic Toxicity (LC-50, OECD 203)	Pass	Pass	Pass	Pass	Pass

a Modified ASTM D943, allowed to run beyond 10,000 h.

The test results expressed above were obtained during the development of the product line and are considered representative of any/all commercial samples.

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