CLARITY® SYNTHETIC HYDRAULIC OIL AW

32, 46, 68

PRODUCT DESCRIPTION

Clarity® Synthetic Hydraulic Oils AW are designed to give maximum protection in both mobile and stationary hydraulic equipment in industrial applications as well as in environmentally sensitive areas.

CUSTOMER BENEFITS

Clarity Synthetic Hydraulic Oil AW delivers value through:

- **Premium performance** — Ashless formulation provides excellent wear protection, rust and corrosion protection, hydrolytic stability, water separability, foam inhibition, and filterability.
- **Long oil life** — Outstanding ability of the synthetic base stock to withstand oxidation at high operating temperatures results in maximum service life for the oil.
- **Low toxicity** — Very low acute aquatic toxicity to both fish and invertebrates based on tests of water accommodated fractions. Ashless formulation facilitates conventional recycling programs.
- **Excellent wear protection at startup** — Minimum change in viscosity over wide operating temperatures due to high viscosity index. Multiviscosity performance minimizes the need to change viscosity grades for seasonal changes.
- **Hydraulic system efficiency** — Very high VI fluid improves hydraulic response time, increases operating temperature range and production, as well as the potential for lowering operating cost.
- **Excellent low temperature pumpability** — Specifically developed to ensure good low temperature fluidity for low temperature operations as low as -40°C (-40°F) for ISO 32 grade, and -30°C (-22°F) for ISO 46 and 68 grades.
- **Zinc-free / Ashless** —Suited for applications involving yellow metals found in axial piston pumps.

FEATURES

Clarity Synthetic Hydraulic Oils AW are designed to give maximum protection to both mobile and stationary hydraulic pumps in high-performance industrial applications as well as in environmentally sensitive areas.

Clarity Synthetic Hydraulic Oils AW are formulated with synthetic base stock and an ashless, zinc-free additive system that provide exceptional oxidation stability, water separability, foam suppression, and protection against wear, rust and corrosion.

Clarity Synthetic Hydraulic Oils AW are formulated with high VI to improve hydraulic response time and increase operating temperature range.

In laboratory efficiency testing, Clarity Synthetic Hydraulic Oils AW provided up to 8% improvement in overall hydraulic pump efficiency when compared to a typical monograde hydraulic oil like Hydraulic Oil AW (a lower VI product with VI <105).

Clarity Synthetic Hydraulic Oils AW 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, while providing an additional level of safety in case of leaks or incidental discharge to the environment.

Clarity Synthetic Hydraulic Oils AW are long-life lubricants, with a dramatically longer oxidation stability life (ASTM D943, Turbine Oil Stability Test) than conventional hydraulic fluids. A longer oxidation stability 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.

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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Conventional antiwear hydraulic oils formulated with metal-containing performance additives may persist in the environment in the event of leaks.

Vegetable-based hydraulic oils that meet environmental requirements may fall short of performance requirements.

APPLICATIONS

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

The antiwear performance of Clarity Synthetic Hydraulic Oils AW make them especially suited for high performance industrial applications utilizing axial piston pumps where pressures may exceed 5000 psi.

Clarity Synthetic Hydraulic Oils AW are well suited for applications suited in environmentally-sensitive areas. They have a viscosity index much higher than typical conventional antiwear hydraulic oils, provide excellent low temperature pumpability and better wear protection at high operating temperatures (refer to Typical Test Data table).

PERFORMANCE CLAIMS

Clarity Synthetic Hydraulic Oil AW meets or exceeds the following industry or manufacturer's requirements:	**32**	**46**	**68**
Arburg		X	
ASTM D6158, HV	X	X	X
Bosch-Rexroth RD/RE 90220-01	X	X	X
DIN 51524-3 (HVLP, 2006, pt. 3)	X	X	X
Eaton Vickers 35VQ25A, M-2950-S, I-286-S	X	X	X
Frank Mohn, Framo hydraulic cargo pumping		X	
ISO 11158 L-HV	X	X	X
Krauss-Maffei Kunststofftechnik		X	
MAG Cincinnati, Cincinnati Machine P-68	X		
MAG Cincinnati, Cincinnati Machine P-69			X
MAG Cincinnati, Cincinnati Machine P-70		X	

For low temperature startups, care must be taken to ensure that the hydraulic oil flows freely into the pump and no cavitation occurs. Otherwise, subjecting a pump to cavitation will cause damage to critical components. Careful attention to the oil's viscosity at low temperature is the key to ensuring adequate flow and preventing cavitation.

Please consult with the original equipment manufacturers (OEMs) of your equipment to determine the maximum viscosity allowed during startup under no load conditions.

The recommended maximum viscosity under load conditions for hydraulic oil as specified by most pump OEMs is 860 cSt. For cold starts under no-load conditions, the startup viscosity can be much higher than 860 cSt. No-load running conditions should be applied until the equipment has warmed up to the maximum startup viscosity under load as recommended by the OEM, and full load operation can then be applied when the oil viscosity falls below this recommended viscosity under load.

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Refer to the service manual of the equipment to ensure that the minimum fluid viscosity requirements are met at the highest operating temperature. Please consult with your equipment manufacturer if equipment is operating outside normal operation conditions.

Clarity® Synthetic 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	32	46	68
Product Number	*255697*	*255698*	*255699*
MSDS Number	*29100*	*29100*	*29105*
API Gravity	37.1	36	35.9
Viscosity, ASTM D445 cSt at 40°C cSt at 100°C	 32.5 7.0	 46.5 9.3	 68.0 11.4
Viscosity Index, ASTM D2270	186	186	162
Brookfield Viscosity, ASTM D2983, cP at -20°C	1040	1820	3030
Brookfield Viscosity, ASTM D2983, cP at -30°C	3060	5430	11,580
Brookfield Viscosity, ASTM D2983, cP at -40°C	11,800	45,440	65,400
Tapered Roller Bearing (CEC L-45-A-99), % Viscosity Loss	< 7%	< 10%	< 7%
Oxidation Stability-TOST ASTM D943, Hours to 2.0mg KOH/g acid number (allowed to run beyond 10,000 h)	> 10,000	> 10,000	> 10,000
FZG Gear Test, DIN 51354, Fail Stage	11	≥ 12	≥ 12
Pour Point, °C, ASTM D97	-48	-42	-45
Flash Point, °C, ASTM D92	228	230	218
Foam Sequence I, II, III ASTM D892, ml	0/0/0	0/0/0	0/0/0
Dielectric Strength, kV[a], ASTM D877[b]	35	35	35
Acute Aquatic Toxicity (LC-50, OECD 203)	Pass	Pass	Pass

a Dielectric strength value applies only to "point of manufacture" of packaged products produced at a Chevron manufacturing facility. (Does not apply to bulk packaging). The oil will quickly lose its high dielectric strength value when exposed to contamination and to very small amounts of moisture and water.

b Industry standard test method for measuring kV values is not precise and test results can differ significantly.

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

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