CLARITY® ELITESYN™ AW 32, 46, 68

PRODUCT DESCRIPTION

Clarity® EliteSyn™ AW oils are premium high-performance ashless anti-wear hydraulic fluids designed to meet the stringent demands of modern OEM designs, where increased performance is required. They give maximum protection and improve productivity and efficiency in both mobile and stationary hydraulic equipment applications. These are high viscosity index fluids that provide a wide operating temperature range.

CUSTOMER BENEFITS

Clarity EliteSyn AW oils deliver value through:

- **Hydraulic system efficiency** - High performance formula improves hydraulic response time, increases operating temperature range and can improve production, as well as the potential for lowering energy cost.
- **Premium performance** - Ashless formulation meets or exceeds major vane, piston and gear pump manufacturer's requirements providing excellent protection of hydraulic systems against wear, rust and corrosion along with exceptional hydrolytic stability, water separability, and filterability for smooth equipment operation.
- **Exceptional oxidation and thermal stability** - Outstanding ability of the synthetic base stock to withstand oxidation at high operating temperatures results in maximum service life for the oil with minimum varnish and sludge formation.
- **Excellent air release and foam control** - Ensures low air content in hydraulic fluid for improved equipment responsiveness.
- **Wide operating temperature range** - 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.
- **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.
- **Low toxicity** - Zinc-free formula is inherently biodegradable[1] 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.

FEATURES

Clarity EliteSyn AW oils 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 EliteSyn AW oils 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 EliteSyn AW oils are formulated with high viscosity index to improve hydraulic response time and increase operating temperature range while resisting shear viscosity loss.

1 Inherently biodegradable by OECD 301D testing and guidelines in EPA 800-R-11-002, November 2011 evaluations for a similar product. Product is not considered readily biodegradable. Clarity Bio EliteSyn AW should be used if a readily biodegradable EAL fluid is required.

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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In side-by-side excavator efficiency testing[2], Clarity EliteSyn AW ISO 46 improved productivity up to 6.2% and fuel efficiency up to 4.5%, when compared to a monograde hydraulic oil (a lower VI product with VI <105). Clarity EliteSyn AW ISO 32 provided a 5% increase in efficiency in plastic injection machines when compared to a monograde hydraulic oil.

Clarity EliteSyn AW oils 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.

Clarity EliteSyn AW oils 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. 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).

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

APPLICATIONS

Clarity EliteSyn AW oils are designed to meet the stringent demands of modern OEM designs, where increased performance of the hydraulic oil is required. They have demonstrated excellent performance in hydraulic systems using vane-, piston-, and gear-type pumps in mobile and stationary equipment. They are designed to provide protection in high performance hydraulic applications where pressures may exceed 5000 psi. These oils are recommended for use in plastic injection molding where OEMs require a fluid meeting DIN 51524 or equivalent industry performance standards. They are also suitable for use in lightly loaded reciprocating compressors.

Clarity EliteSyn AW oils are compatible with seal materials commonly found in most hydraulic systems, including nitrile and flouro elastomers (NBR and FKM).

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.

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.

2 Clarity EliteSyn AW ISO 32 obtained greater results in both productivity and fuel efficiency compared to an ISO 46.

CLAIMS AND SPECIFICATIONS

	32	46	68
Parker Hannifin (Dennison) HF-0, HF-1, HF-2	**A**	**A**	**A**
Eaton (Vickers) E-FDGN-TB002-E	**A**	**A**	**A**
Fives Cincinnati[a] (formerly MAG Cincinnati, Cincinnati Machine, Cincinnati Milacron)	M P-68	M P-70	M P-69
Hitachi/John Deere Construction JCMAS HK VG 32, 46	M	M	-
Krauss-Maffei Kunststofftechnik	-	M	-
NSF H2[b]	**A**	**A**	**A**
US Steel (AIST) 126, 127	M	M	M
ASTM D6158 HM, HV	M	M	M
DIN 51524-2 HLP, 51524-3 HVLP	M	M	M
ISO 11158 L-HM, L-HV	M	M	M
SAE MS1004-HM	M	M	M

a Obsolete specification

b Clarity EliteSyn AW (ISO 32, 46, 68) are registered by NSF and are acceptable as lubricants 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.

A: Approved for or listed M: Meets or exceeds requirements

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.

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TYPICAL TEST DATA

ISO Grade	Test Method	32	46	68
Product Number		*230350*	*230351*	*230352*
SDS Number *U.S.* *Canada* *Mexico*		 *56604* *64839* *64838*	 *56642* *64841* *64842*	 *56621* *64843* *64844*
API Gravity	ASTM D287	35.9	35.5	35.5
Density at 15°C, kg/l	ASTM D4057	0.8455	0.8475	0.8472
Viscosity, Kinematic mm^2/s at 40°C mm^2/s at 100°C	ASTM D445	 33.0 7.1	 46.3 9.15	 68.0 11.5
Viscosity Index	ASTM D2770	191	184	164
Flash Point, °C(°F)	ASTM D92	216	234	246
Pour Point, °C(°F)	ASTM D97	-52	-47	-44
Brookfield Viscosity cP at -20°C cP at -30°C cP at -40°C	ASTM 2983	 985 2790 10320	 1760 5320 22300	 3560 13940 -
Copper Corrosion 3hr at 100°C	ASTM D130	1a	1a	1a
Foam Test, Seq. I Tendency, mL Stability, mL	ASTM D892	 10 0	 10 0	 10 0
Tapered Roller Bearing, % Viscosity Loss, 40°C	CEC L-45-A-99	6%	9%	3%
Rust Test, Procedure A & B	ASTM D665	Pass	Pass	Pass
Water Separability, minutes to <3mL at 54°C	ASTM D1401	5	25	20
Oxidation Stability, TOST Hours to 2.0 mg KOH/g TAN	ASTM D943	>10,000	>10,000	>10,000
FZG (A/8.3/90), Fail Load Stage	DIN 51354	12	>12	>12
Acute Aquatic Toxicity (LC-50)	OECD 203	Pass	Pass	Pass

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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