Clarity® Bio Elitesyn™ AW

Biodegradable high performance hydraulic fluids

(formerly Clarity® Synthetic)

Product Description

Clarity® Bio EliteSyn™ AW oils are synthetic, largely renewable, high-performance hydraulic fluids, that are formulated to meet the requirements of the United States Environmental Protection Agency (**EPA**) Vessel General Permit (**VGP**)[#] for biodegradation^, low toxicity, and low bioaccumulation, and have been awarded the EU Eco-label.

Clarity Bio EliteSyn AW oils are classified as environmentally acceptable lubricants (**EALs**)*, formulated with ashless technology to provide protection in mobile and stationary hydraulic equipment in industrial and marine applications, including environmentally sensitive areas*.

Customer benefits and product features

Customer benefits

- **Compliant with EPA requirements for EALs**
  Meets the EPA's requirements for EALs relating to biodegradation, low toxicity and low bioaccumulation to fish and invertebrates as set out in the VGP.
- **Zinc-free additive system**
  Suitable for applications involving yellow metals found in axial piston pumps.
- **Protection and performance**
  Ashless formulation helps provide protection against wear of hydraulic pumps, and contributes to rust and corrosion protection, hydrolytic stability, water separability, foam inhibition, air release, filterability and seal compatibility.
- **Outstanding oil life**
  Formulated with a synthetic base stock to help withstand oxidation at high operating temperatures, resulting in extended service life for the oil relative to vegetable-based, readily biodegradable products.
- **Low temperature pumpability**
  Specifically developed to help provide low temperature fluidity for low temperature operations.

^ Biodegradability is defined by the Organization for Economic Cooperation and Development (**OECD**) as meeting specific biodegradation criteria under defined testing conditions.
[#] In December 2013, the United States Environment Protection Agency's (**EPA**) Vessel General Permit (**VGP**) became effective, requiring any vessel greater than 79 feet to use environmentally acceptable lubricants* (**EAL**) in all oil-to-sea interfaces.
* Environmentally acceptable lubricants (**EALs**) are lubricants that are biodegradable, minimally toxic and not bio-accumulative, according to the U.S. Environmental Protection Agency's (**EPA**) Vessel General Permit (**VGP**). The EPA requires the use of EALs for certain applications.

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Customer benefits and product features *cont…*

Product features

Clarity Bio EliteSyn AW oils are made with more than 85% renewable synthetic base stock. These high performance synthetic lubricants utilize sustainably sourced renewable plant-based feedstocks to produce hydrocarbon molecules that contain lower levels of impurities than found in traditional base oils derived from crude petroleum.

In line with the requirements for EALS, they are readily biodegradable, non-bioaccumulative, and have low toxicity. In the event of a spill, the product is compliant with the OECD's biodegradation requirements for EALs, and is designed to biodegrade by more than 60% within 28 days, helping to mitigate the impact to the environment.

These oils are designed to the performance requirements of conventional/non-EAL antiwear hydraulic oils, while providing an additional benefit in case of leaks or incidental discharge to the environment and are approved for use by leading marine stern tube manufacturers. They help protect hydraulic equipment used in vessels and in both mobile and stationary hydraulic pumps in high-performance industrial applications.

Clarity Bio EliteSyn AW oils are formulated with synthetic base stock and an ashless, zinc-free additive system that provides exceptional oxidation stability, water separability, foam suppression, and helps protect against wear, rust and corrosion. The high VI synthetic base stock allows for operation over a wide temperature range and provides excellent low temperature pumpability.

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Applications

Clarity Bio EliteSyn AW hydraulic oils are designed for performance in applications involving:

ISO GRADE	32	46	68
Mobile and stationary hydraulic vane, piston and gear-type pumps	x	x	x
High performance industrial applications where pressures may exceed 5000 psi	x	x	x
Servo-valves using multi-metal components	x	x	x
Stern tube applications			x

Product approvals, performance and recommendations

CLARITY® BIO ELITESYN AW™	
AEGIR Marine	Approved
Danfoss/Eaton E-FDGN-TB002-E	Approved
EU Ecolabel BE/027/006	Approved
Kobelco Eagle (KEMEL)	Approved
Parker Hannifan (Dennison) HF-1, HF-6	Approved
ASTM D8324-21	Meets requirements

EU Ecolabel: BE/027/0076

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Typical Test Data

CLARITY BIO ELITESYN AW	TEST METHOD	RESULTS		
ISO Grade		**32**	**46**	**68**
Product Code		**520387**	**520388**	**520389**
Air Release Time, 50.0 min	ASTM D3427	2.95	2.18	6.38
Appearance	SM 360	1	1	1
Copper Corrosion, 3 h, 100	ASTM D130	1b	1a	1a
Density, 15 kg/L	ASTM D4052	0.8223	0.8263	0.8262
Flash Point, COC °C	ASTM D92	235	252	237
FZG, Failure Load Stage, A/8.3/90	ASTM D5182	12	>12	>12
Kinematic Viscosity,				
mm^2/s @ 100°C	ASTM D445	6.5	8.15	11.85
mm^2/s @ 40°C	ASTM D445	31.81	43.72	67.12
Rust Test, Proc. A, 24	ASTM D665	Pass	Pass	Pass
Rust Test, Proc. B, 24	ASTM D665	Pass	Pass	Pass
API Gravity		40.6	39.7	39.7
Viscosity Index	ASTM D2270	164	165	175
Flash Point, °C	ASTM D92	235	252	237
Pour Point, °C	ASTM D97	-39	-35	-41
Oxidation Stability	ASTM D943	>10,000	>10,000	>10,000
Biodegradability,% in 28 days	OECD 301B	>60	>60	>60
Algae, 72 h, EC-50, mg/L	OECD 201	>100	>100	>100
Daphnia magna 48 h, EC-50, mg/L	OECD 202	>100	>100	>100
Fathead minnow, 96 h, LC-50, mg/L	OECD 203	>100	>100	>100

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ENVIRONMENT, HEALTH, and SAFETY. Information is available on this product in the Safety Data Sheet (SDS) and Customer Safety Guide. Customers are encouraged to review this information, follow precautions, and comply with laws and regulations concerning product use and disposal. To obtain an SDS for this product, visit the Product Information Center.

This Product Data Sheet (PDS) was produced for the Asia-Pacific region in good faith from the best information available at the time of issue. The specific information included may not directly reflect the local market or conditions. While the values and characteristics are considered representative, some variation, not affecting performance, can be expected. For the most up-to-date, country-specific information, please contact your local customer service center.

Customers should 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.

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