

## Achieval Enviro HP

KOST® USA's Achieval Enviro HP (High Pressure) is a high performance hydraulic fluid designed for demanding industrial applications requiring environmental sensitivity, water solubility, fire resistance, and excellent anti-wear properties over wide temperature ranges. This polyalkylene glycol (PAG) based fluid is anhydrous (water-free). Achieval Enviro HP does not break down to form sludge, and does not hydrolyze in the presence of water. Furthermore, because of its high viscosity indices and excellent low temperature characteristics, it may replace two or three viscosity grade mineral oils to provide high performance across all seasons. This hydraulic fluid is ideal for use in applications such as Steel Mills, Die Casters and Industrial applications .

## Features and Benefits

- Excellent Anti-Wear Performance - Exceptional load-carrying capabilities, specially formulated to provide effective corrosion protection and anti-wear performance in hydraulic systems
- Clean, Long Lasting Operation - Offers a long service life and operating reliability, lower maintenance costs, and reduced overall downtime
- Fire Resistance - Achieval Enviro HP is FM Approved, using test method 6930
- All Season Performance - High viscosity indices and low pour points allow for year round usage
- Biodegradability - Readily biodegradable according to OECD 301F
- Practically Non-Toxic - To fish and aquatic wildlife according to the U.S. Fish and Wildlife Service
- High Waste Treatability - Demonstrated no adverse impact on either the proper functioning or performance of the waste treatment systems, even at high discharge levels

## Performance Advantages

**Water Solubility** - Achieval Enviro HP hydraulic fluid is heavier than water, it dissolves completely without leaving a surface glaze, which eliminates costly cleanup.

**Hydrolytic Stability** - Achieval Enviro H fluids will not break down to form sludge or hydrolyze in the presence of water. This protects against the formation of harmful acids that can damage equipment and lead to premature failure.

**Non-Sludge or Glaze Forming** - Achieval Enviro H fluid is oxidatively stable and will not degrade to form glaze, sludge or varnish. This chemistry contributes to long-term system cleanliness, extended service intervals and increases the overall life of product.

## Regulatory and Disposal

Requirements for reporting accidental fluid spills and discharges may vary from state to state and from municipality to municipality. It is important that you contact the appropriate authorities in your local area to clearly understand any reporting or other requirements.

Consult local sewage treatment plant authorities for regulations prior to disposing of any product. For guidance, contact your local Water Board, regional office of the Environmental Protection Agency, or appropriate regulatory authority.

### Regulatory Information

- SARA Sections 302 and 304 Reportable Quantities for Extremely Hazardous Substances – None
- CERCLA Sections 102 and 103 (Reportable Quantities for Hazardous Substances) – None
- Superfund Amendments and Reauthorization Act of 1986 Title III (Emergency Planning and Community Right-to-Know Act of 1986) Section 313 – None
- U.S. Toxic Substances Control Act  
All components of this product are on the TSCA Inventory or are exempt from TSCA Inventory requirements under 40 CFR 720.30.
- California Proposition 65 (Safe Drinking Water and Toxic Enforcement Act of 1986)  
This product contains no listed substances known to the State of California to cause cancer, birth defects or other reproductive harm, at levels which would require a warning under the statute.
- Pennsylvania (Worker and Community Right-To-Know Act): Pennsylvania Hazardous Substances List and/or Pennsylvania Environmental Hazardous Substance List  
This product does not contain chemicals at levels which require reporting under this statute.
- Canadian Domestic Substances List (DSL)  
All substances contained in this product are not considered as Persistent, Bioaccumulative, and/or Inherently Toxic to the environment.

## TYPICAL PROPERTIES

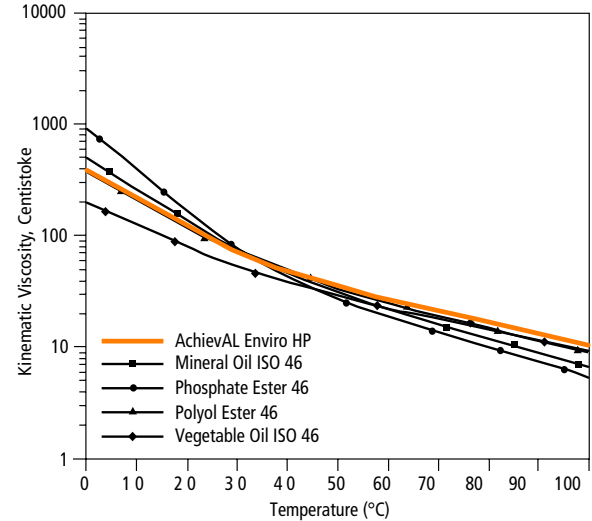
Performance Properties	46	Test Method
FZG Visual Gear Test, Stages Passed	12	ASTM D5182
Four Ball EP Test		ASTM D2783
Load Wear Index	32.10	
Last Non-seizure, 80 kg (mm scar)	0.40	
Last Seizure, 126 kg (mm scar)	2.60	
Weld Load, kg	160	
V104 Vane Pump Test (total mg wear)	<10	ASTM D7043
35 VQ Vickers Vane Pump Test <sup>1</sup>	Pass	M-2950-S
Individual Cartridge Wear, mg	8,8,8	
Average Wear, mg	8	
Sonic Shear Stability		ASTM D5621
Initial Viscosity at 40°C (cSt)	47.1	
Irradiated Viscosity at 40°C (cSt)	47.0	
<b>Viscosity Properties</b>		
Viscosity at 40°C (cSt)	46.0	ASTM D445
Viscosity at 100°C (cSt)	9.8	
Viscosity at 0°C (cSt)	390	
Viscosity Index	200	ASTM D2270
<b>Fire Properties</b>		
Flash Point – Cleveland Open Cup, °C	312	ASTM D92
Flash Point – Pensky Martens Closed Cup, °C	223	ASTM D932
Fire Point, °C	316	ASTM D92
FM Approvals <sup>2</sup>	Approved	Test Standard 6930
<b>Physical-Chemical Properties</b>		
Specific Gravity at 20°C	1.035	ASTM D1298
Foam Test –		ASTM D892
Sequence I, Initial Volume/ml	10/0	
Sequence II, Initial Volume/ml	10/0	
Sequence III, Initial Volume/ml	10/0	
Vapor Pressure (mm Hg)	<0.01	ASTM E1719
Specific Heat (Cal/g/°C)	0.481	ASTM E1269
Pour Point, °C	-51	ASTM D97
Ash Content (%)	0.008	ASTM D482
Corrosion Protection (TORT)	Pass	ASTM D665A
Copper Strip Corrosion	1a, shiny	ISO 2160
Aging Behavior (Hrs)		DIN 51587
mg KOH/g	0.92	
Hours	1,008	
Coefficient of Expansion		ASTM D1903
at 20°C	0.00080	
at 55°C	0.00078	
Weight, lbs/gal. (20°C)	8.57	
28 Day % Biodegradation <sup>3</sup>	72	OECD 301F
Static Sheen Test at 23° C	No sheen	

<sup>1</sup> Southwest Research    <sup>2</sup> FM Approvals, Test Standard for Flammability of Industrial Fluids, Class Number 6930, January 2002 These are typical properties, not to be construed as specifications    <sup>3</sup> Product is considered Readily Biodegradable.

## VISCOSITY GRADE SELECTION

The following graph can be used to assist in selection of the appropriate fluid viscosity grade given the hydraulic system operating temperature. They also illustrate that Achieval® Fluids have a higher viscosity index (flatter curve) than some other classes of fluids, and thus, Achieval may replace two or three oil viscosity grades.

Achieval® Enviro HP Hydraulic Fluid vs. Various ISO 46 Fluids



## HYDRAULIC SYSTEM CONVERSION

For best results when converting to a Achieval Enviro HP Hydraulic Fluid, ensure the following:

- The hydraulic system is thoroughly clean and free of contamination from previous fluids
- Oil filters are new
- Paint, plastics, seals and elastomers are compatible
- Standard industry procedures are followed

For more information on recommended flush procedure for systems that previously contained petroleum-based hydraulic fluid, please reach out to your KOST USA Sales Representative for step by step procedure.

## REGULATORY & DISPOSAL

Requirements for reporting accidental fluid spills and discharges may vary from state to state and from municipality to municipality. It is important that you contact the appropriate authorities in your local area to clearly understand any reporting or other requirements.

## Compatibility

### Other Hydraulic Fluids

Achieval<sup>®</sup> Enviro HP Hydraulic Fluid is not compatible with hydrocarbon-based hydraulic fluids. As with any fluid conversion, recognized industry procedures including system cleanup and flushing should be followed.

### Paints

PAG-based fluids show some solvency for common oil-based paints but minimal solvency for many epoxy-based paints. If interior surfaces of hydraulic system components are painted, it may still be possible to convert to a PAG fluid. Extra care should be taken to ensure that lifted paint trapped by the filter does not cause the pump to be starved of lubricant. Following the conversion, the painted surfaces should be carefully monitored for trends toward paint softening, lifting, and peeling. If paint removal does occur, frequent cleaning or replacement of filters may be required until the paint is completely removed.

### Elastomers

Achieval<sup>®</sup> Enviro HP Hydraulic Fluid is suitable for use with many elastomeric materials used in seals and gaskets. Because of the variations that can exist between elastomers in the same generic family, it is important to test the compatibility of specific elastomers that are to be used in a critical application, please reach out to your KOST USA Sales Representative for a list of compatible elastomers.

### Plastics

Compatibility should be assessed for any plastic components (such as reservoir sight glasses) exposed to a hydraulic fluid. Because of the variations that can exist between plastics in the same generic family, it is important to test the compatibility of specific elastomers that are to be used in a critical application.

	Recommended	Not Recommended
25° C	Polypropylene, Polyethylene-Low Density	Homalite Polycarbonate, Lucite/Plexiglas Polymethylmethacrylate, Polyurethane
100° C	Polypropylene	Polyethylene-Low Density, Homalite Polycarbonate, Lucite/Plexiglas Polymethylmethacrylate, Polyurethane

## Environmental Data

KOST<sup>®</sup> USA's Achieval Enviro HP is readily Biodegradable, classified as a chemical rather than an oil for industrial lubricants, and is not subject to OPA 90 requirements.

### Biochemical Oxygen Demand

	BOD 5	BOD 10	BOD 20	BOD 28
Achieval <sup>®</sup> Enviro HP	-0.50	-3.99	60.29	67.76