SINCE 1839
Schaeffer's
SPECIALIZED LUBRICANTS

TECHNICAL DATA

102 Barton Street, St. Louis MO 63104
Ph: 800-325-9962 / Fax: 314-865-4107
www.schaefferoil.com
ISO 9001 CERTIFIED

#275S DILEX SUPREME HYDRAULIC FLUID WITH DYNAVIS®
ISO Grades 22, 32 and 46

Dilex Supreme Hydraulic Fluid with **DYNAVIS®** is a para-synthetic, anti-wear, rust and oxidation inhibited maximum efficiency multi-grade hydraulic fluid specially formulated for use in hydraulic excavators, hydraulic cranes, aerial bucket trucks, forestry equipment, and industrial hydraulic systems. These systems are subjected to wide variations in ambient and operating temperatures and require protection against the formation of varnish deposits on close clearance servo-valves and other system components. Dilex Supreme Hydraulic Fluid with **DYNAVIS®** also provides **a high dielectric strength of 35 Kilovolts**

Dilex Supreme Hydraulic Fluid with **DYNAVIS®** is blended from the finest quality solvent refined, severely hydro-finished 100% paraffin base oils and polyalphaolefin (PAO), synthetic base fluids available to provide the following advantages:

- Excellent Low Temperature Properties and Superior Oxidation Stability
- Excellent Resistance to Thermal Degradation
- High Viscosity Index
- Excellent Film Strength
- Superior Operating Temperature Reduction
- Compatibility With All Types of Seals and Coatings

Blended into this unique combination of (PAO) and 100% pure paraffin petroleum base oil is a carefully balanced, premium anti-wear additive package, **VarniShield™**, and an extremely shear stable viscosity index improver, **DYNAVIS®**. **VarniShield™** is patented hydraulic fluid additive technology designed to prevent the formation and build-up of varnish deposits, while providing exceptional anti-wear performance, outstanding thermal and oxidation stability, rust and corrosion protection and rapid water separation. The **VarniShield™** additive system provides Dilex Supreme Hydraulic Fluid with **DYNAVIS®** with a high degree of thermal and oxidative stability thus minimizing the formation of sludge and varnish. If any varnish particles do form, the dispersancy of the **VarniShield™** additive will keep these particles suspended to prevent them from depositing on critical internal components. This helps eliminate the replacement of components such as filters and valves and the costs associated with these activities.

In addition to protecting against the formation of varnish deposits, keeping the system clean and operating longer, the **VarniShield™** additive technology provides the following performance benefits:

- Exceptional and long lasting anti-wear protection to protect system components
- Extended pump and bearing life
- Enhanced thermal and oxidative stability
- Superior hydrolytic stability with excellent demulsibility characteristics so water separates quickly
- Excellent rust and corrosion protection that extends component life
- Excellent anti-foaming and air release properties.
- Reduced sludge, varnish and deposit formation to reduce filter blockage and provide excellent filterability.
- Improved durability of non-ferrous parts.
- Enhanced compatibility with existing fluids.
- Excellent fluid quality reserve to maintain performance features under severe service conditions and extended drain intervals.
- Enhanced fluid and seal life which results in reduced system maintenance.

Continued on next page

DYNAVIS® additive technology provides multi-grade functionality and wide temperature performance. In addition, **DYNAVIS®** will increase the performance of the hydraulic system by increasing the hydraulic efficiency of the system and reducing energy and fuel consumption. **DYNAVIS®** will also enhance the productivity of the equipment. The extremely shear stable polymer viscosity index improver provides Dilex Supreme Hydraulic Fluid with **DYNAVIS®** with a viscosity index of **>200**. This extremely high viscosity index provides the proper viscometric properties that are needed for maximum efficiency over a wide range of operating temperatures and pressures. By maintaining its viscometric properties in the optimum viscosity range for the hydraulic pump, Dilex Supreme Hydraulic Fluid with **DYNAVIS®** will provide the following performance benefits:

- Improved viscometric properties over a wide range of temperatures
- Less warm-up time and improved start-up during low temperature operation
- Faster and smoother response of the hydraulic system at low temperatures
- Less power required and consumed at cold start-up than conventional fluids
- Reduced risk of pump cavitation and lubricant starvation at low operating temperatures
- Improved volumetric and hydro-mechanical efficiency
- Less internal pump leakage at high operating temperatures
- Excellent resistance to recirculation resulting in a reduction in heat build-up and an increase in hydraulic system responsiveness
- Less hydraulic system fade
- Stable pump performance, especially during high operating temperatures
- Excellent protection from wear during periods of high operating temperatures and high pressures
- Higher flow rate at peak operating temperature
- Stress on the overall system is kept in check
- Significantly less wear and tear on hydraulic system components (pumps, hoses, seals, etc.)
- An increased Temperature Operating Window (TOW) that allows the fluid to perform consistently and reliably with in a wide range of temperatures from cold to hot
- Ability to exhibit lower viscosity at cold temperatures and delivery of stay-in-grade viscosity at high operating temperatures
- Minimization of friction and wear and reduced fuel consumption over a wide temperature range
- Elimination of seasonal changes
- Increased hydraulic power
- Enhanced energy efficiency with lower energy consumption for the same amount of work
- Improved productivity (more work can be done in the same amount of time)
- Reduced Greenhouse gas emissions
- Lower operating temperatures which reduces the risk of overheating and equipment shutdown
- Potential fuel savings and reduced emissions
- Reduced operating and maintenance costs

The trend by hydraulic pump manufacturers to employ higher speeds, higher pressures, reduced cycling times and smaller systems along with the fact that in many applications the equipment may be operating beyond its design capacity can result in thin film lubrication conditions. These thin film lubrication conditions can result in increased wear conditions and rates, which can lead to a loss in system efficiency, reduced equipment life and potentially catastrophic system failure.

Dilex Supreme Hydraulic Fluid with **DYNAVIS®** also contains Micron Moly®, a liquid soluble type of moly that plates itself to sliding, rolling and rubbing metal surfaces of hydraulic and compressor systems. This plating action forms a long lasting solid lubricant film on surfaces that will withstand pressures up to 500,000 pounds per square inch. Micron Moly® not only produces a smooth finish surface, but also reduces friction between the moving parts which results in less heat being generated, lower operating temperatures, and a reduction in downtime.

Dilex Supreme Hydraulic Fluid with **DYNAVIS®** meets and exceeds the following specifications and manufacturers requirements: Denison HF-O, Eaton-Vickers M2950-S, JCMAS HK specification Eaton Char-Lynn, Haldex Barnes, Husky, FMC, Rexnord, Commercial Shearing HD 2/900, Commercial Hydraulics, Cincinnati Machine P-68,and P-70, DIN 51524 Part 3, ISO 6743/4 Type HV, ISO 11158:2009 HV, Bosch Rexroth, Saur Sundstrand, Saur Danfoss, US Steel 126, 127 and 136; AF Nor E 48-603, Altec and Pittman.

TYPICAL PROPERTIES

ISO Grade (AGMA Grade)	**22**	**32**	**46**
Specific Gravity 60°F/15°C	0.86	0.875	0.88
Viscosity cSt 40°C (ASTM D-445)	20.10-23.55	29.40-34.75	43.50-50.40
Viscosity cSt 100°C (ASTM D-445)	4.90-5.70	6.8-7.8	9.3-10.61
Viscosity Index (ASTM D-2270)	201	204	207
Brookfield Viscosity (ASTM D-2983)			
cP @ 0°C/32°F	120	210	309
cP @ -10°C/14°F	230	419	---
cP @ -20°C/-4°F	479	989	2,259
cP @ -30°C/-22°F	1,250	2,529	5,917
Sonic Shear Test after 40 minutes (ASTM D-5621)			
% Viscosity Loss @ 40°C	7	7	7.9
Flash Point °F/°C (ASTM D-92)	420°/216°	435°/224°	440°/227°
Pour Point °F/°C (ASTM D-97)	-76°/-60°	-65°/-54°	-63°/-53°
Aniline Point °F/°C (ASTM D-611)	220°/104°	220°/104°	220°/104°
Total Acid Number (ASTM D-664)	0.91	0.91	0.91
Copper Strip Corrosion Test 3 hrs. (ASTM D-130)	1A	1A	1A
Rust Test (ASTM D-665) *Procedure A (Distilled Water)*	Pass	Pass	Pass
Procedure B (Salt Water)	Pass	Pass	Pass
Four Ball EP Test (ASTM D-2783) Weld Point, kg-f	160	160	160
Weld Point, kg	160	160	160
Four Ball Wear Test (ASTM D-4172)			
1hr/40kg/130°F, Mean Scar diameter, mm	0.45	0.4	0.4
1hr/20kg/130°F, Mean Scar diameter, mm	0.27	0.27	0.27
Falex Continuous Load lbs. (ASTM D-3233)			
Failure Load,lbs-f	1250	1250	1250
% Residue	0.01	0.01	0.01
Foam Tendency (ASTM D-892)			
Sequence I	0/0	0/0	0/0
Sequence II	0/0	0/0	0/0
Sequence III	0/0	0/0	0/0
FZG Test (ASTM D-5182) Load Stage Pass	12	12	12
Hydrolytic Stability (ASTM D-2619)			
Copper Wt. Loss, mg/cm^2	0.0566	0.0566	0.0566
Acidity of Water mg/KOH	0	0	0
Demulsibility Test (ASTM D-1401)			
Oil-Water-Emulsion	40-40-0	40-40-0	40-40-0
Time, minutes	15	15	15
Denison Filterability Test TP-02100			
Filtration Time, without water (seconds)	146	146	146
Filtration Time, with 2% water (seconds)	163	163	163
Oxidation Stability Test (ASTM D-943) Hours to TAN of 2	5000+	5000+	5000+
Sludge Tendencies (ASTM D-4310)			
Neutralization Number after 1000 hours	0.34	0.34	0.34
Insoluble Sludge, mg	39.4	39.4	39.4
Total Copper, mg	0.1	0.1	0.1

ISO Grade (AGMA Grade)	**22**	**32**	**46**
Thermal Stability Test (ASTM D-2070)			
168 hr/135°C, copper/steel catalyst			
Sludge (mg/1000ml)	1.8	1.8	1.8
Copper weight loss, mg/100ml	0.2	0.2	0.2
Condition of Copper Rod	1	1	1
Air Release (ASTM D-3427), Time (minutes @ 122°F)	6.2	6.2	6.2
Denison T6H20C Hybrid Pump Test			
Phase 1 1700 rpm/110°C, weight loss	5.1	5.1	5.1
Phase 2 1700 rpm/80°C + 1% water, weight loss	5.8	5.8	5.8
Vickers 35VQ25 Pump Test			
Total Weight Loss Vane, mg	5	5	5
Total Weight Loss Ring, mg	11	11	11
Total Weight Loss, mg	16	16	16
Dielectric Strength, minimum (ASTM D877) kV	35	35	35