SINCE 1839 Schaeffer MANUFACTURING COMPANY

ISO 9002 CERTIFIED

TECHNICAL DATA

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#254 HTC SUPREME
ISO 32 THROUGH 220

HTC Supreme is a premium quality semi-synthetic, non detergent, rust and oxidation inhibited, antiwear oil that is specially formulated to meet the lubrication requirements of all types of air lines, pumps, vacuum pumps, hydraulic, turbine, compressor, bearing and general oiling applications.

HTC Supreme is blended from the finest quality severely solvent refined, severely hydrofinished 100% pure paraffin base oils and polyalphaolefin (PAO) synthetic base fluids available. This unique combination provides HTC Supreme with the following advantages.

1. **Excellent Low Temperature Properties**. This results in the bearing and other machine parts being instantly lubricated at sub-zero temperatures the moment they start turning.
2. **Superior Oxidation Stability**. Any oil as it is increasingly exposed to high temperature operation undergoes the process of oxidation. This results in the oil's thickening and buildup of acidic components. Because of the PAO and 100% paraffin base oil's uniform molecular structure, the process of oxidation is greatly reduced.
3. **Excellent Resistance to Thermal Degradation**.
4. **Excellent Hydrolytic and Demulsibility Characteristics**. This results in the separation of water much faster and more completely, allowing the water to be easily removed from the system. These properties result in increased bearing, pump and gear life, antiwear protection and improved rust and corrosion protection.
5. **High Viscosity Index**. This results in a minimum change in viscosity. The adequate viscosity for proper lubrication is provided regardless of temperature change.
6. **Excellent Film Strength**. This results in increased wear protection.
   base oils have better specific heat values (less heat is absorbed) and better thermal conductivity **7.** **Superior Operating Temperature Reduction**. This unique combination of PAO and 100% paraffin than conventional oils. These combined properties help to reduce operating temperature.
8. **Compatibility With All Types of Seals and Coatings.**

Blended into these 100% pure paraffin base oils and polyalphaolefin base fluids is a highly specialized multifunctional additive package that provides HTC Supreme with the following performance benefits.

1. **Exceptional antiwear protection**
2. **Extended pump life**
3. **Extended bearing life**
4. **Enhanced thermal and oxidative stability**
5. **Superior hydrolytic stability**
6. **Excellent demulsibility characteristics**
7. **Excellent rust and corrosion protection**
8. **Excellent antifoaming and air release properties**
9. **Reduced sludge, varnish and deposit formation**
10. **Improved durability of non-ferrous parts**

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11. Reduced filter blockage
12. Enhanced filterability
13. Enhanced compatibility with existing fluids
14. Enhanced fluid life
15. Enhanced seal life
16. Reduced system maintenance

The trend among hydraulic pump builders and compressor manufacturers is to employ higher speed and pressures. Further many turbine systems, especially those that are geared type turbine systems are generally subjected to shock loads and occasional overloading. These conditions often result in conditions of thin film lubrication, that can result in excessive wear. This excessive wear can not only result in a loss in hydraulic pump and compressor efficiency, but also can result in a costly shutdown for maintenance.

Though HTC Supreme contains an exceptional antiwear performance that lasts longer than most conventional antiwear hydraulic fluids, even this exceptional antiwear package also will disappear over time. To fortify the HTC Supreme's antiwear capabilities, Micron Moly® is further blended into the HTC Supreme.

Micron Moly® is a liquid soluble type of moly that plates itself to the sliding and rubbing surfaces of the hydraulic, turbine and compressor systems. This plating action forms a long lasting solid lubricant film on these rubbing and sliding surfaces. This moly film will withstand pressures up to 500,000 pounds per square inch. Once plated to the sliding and rubbing surfaces the Micron Moly® not only produces a smooth finished surface, but also reduces friction between the moving parts. This results in less heat being generated, which in turn not only reduces operating temperatures, but also downtime.

HTC Supreme can also be used as a slide and way lube, an airline oil for pneumatic systems, as a circulating oil and in bearing and gearbox applications, where a non extreme pressure oil is called for.

HTC Supreme meets and exceeds the following specifications and manufacturers' requirements: Haggulands Dension HF-O, Vickers I-286-S and M-2950-S, Rexnord, Commercial Shearing HD 2/900, Commercial Hydraulics, Cincinnati Milicron P-54, P-68, P-69, P-70, DIN 51524 Part 1 & 2, Lee-Norse 100-, Jeffery No. 87, U.S. Steel 126,127 and 136, AFNOR E 48-603, MIL-L-17331H, General Electric GEK 32568A,Brown Boveri HTGD 90117, Westinghouse turbine specifications, Ingersoll Rand, Joy, Garnder Denver, Sullair, Worthington, LeRoi, Quincy and Atlas Copco compressor specifications.

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TYPICAL PROPERTIES

ISO Grade	32	46	68	100	150	220
AGMA Grade	1	1	2	3	4	5
API Gravity 60°F	34.8	31.16	32.32	30.75	30.1	29.3
Specific Gravity 60°F	.8509	.8699	.8638	.8721	.8756	.88
Viscosity SUS 100°F (ASTM D-445)	139.7-180.4	232-264.3	336.2-383.4	486-547.2	728.1-736.3	1053.4-1163.2
Viscosity Cst 40°C (ASTM D-445)	27.00-33.50	45.0-51.2	65.00-74.00	92.50-105.00	138.94-140.6	200-220.5
Viscosity Cst 100°C (ASTM D-445)	4.9-5.6	6.72-7.3	8.66-9.47	10.90-11.89	14.17-14.45	18.34-19.59
Viscosity Index (ASTM D-2270)	104	102	105	102	100	101
Brookfield Viscosity (ASTM D-2893)						
cP @ 0°F	3204	4060	-----	-----	-----	-----
Borderline Pumping Temperature						
°F/°C ASTM D-3829	-10°/-23.33°	-10°/-23.33°	0°/-17.78°	-----	-----	-----
Flash Point °F/°C (ASTM D-92)	410°/210°	448°/231°	464°/240°	476°/247°	502°/261.11°	500°/265°
Fire Point °F/°C ASTM D-92	450°/232°	490°/254°	505°2639°	515°/268°	535°/279.44°	548°/282.22°
Pour Point °F/°C ASTM D-97	-25°/-31.67°	-25°/-31.67°	-10°/-23.33°	-10°/-23.33°	0°/-17.78°	5°/-15°
Total Acid Number ASTM D-664	0.5-0.9	0.5-0.9	0.5-0.9	0.5-0.9	0.5-0.9	0.5-0.9
Rust Test (ASTM D-665)						
Procedure A-Distilled Water	Pass	Pass	Pass	Pass	Pass	Pass
Procedure B-Salt Water	Pass	Pass	Pass	Pass	Pass	Pass
Copper Strip Corrosion Test (ASTM D-130)						
3 hrs	1a	1a	1a	1a	1a	1a
Four Ball Wear Test (ASTM D-4172) (1 hr/40kg/130°F)						
Mean Scar Diameter, mm	.45	.45	.45	.45	.45	.40
Four Ball Wear Test (ASTM D-4172) (1hr/20kg/130°F)						
Mean Scar Diameter, mm	.27	.27	.27	.27	.25	.20
Four Ball Wear E.P. Test (ASTM D-2783)						
Weld Load, kg	126	126	160	160	200	200
Load Wear Index	26.2	26.2	27.7	27.7	28	29.2
Falex Continuous Load (ASTM D-3233)						
Failure Load, lbs	1250	1250	1250	1250	1500	1500
Conradson Carbon Residue (ASTM D-189)						
%Residue	.01	.01	.01	.01	.01	.01
FZG Gear Test (ASTM-5182)						
Load Stage Pass	12th	12th	12th	12th	12th	12th
Hydrolytic Stability (ASTM D-2619)						
Copper Wt Loss mg/cm^2	0.1	0.1	0.1	0.1	0.1	0.1
Acidity of Water mg/KOH	0.05	0.05	0.05	0.05	0.05	0.05
Demulsibility (ASTM D-1401)						
O-W-E	40-40-0	40-40-0	40-40-0	40-40-0	40-40-0	40-40-0
Time	15	15	15	15	15	15

Typical Properties Continued

ISO Grade	32	46	68	100	150	220
Dennison Filterability Test						
Time, w/o (sec)	112	112	112	112	112	112
Time, w/water (sec)	146	146	146	146	146	146
Oxidation Stability Test (ASTM D-943)						
Hr to Tan of 2	4000	4000	4000	4000	4000	4000
Sludge Tendencies (ASTM D-4310)						
Total Sludge, mg	36	36	36	36	36	36
Copper wt. loss, mg	22	22	22	22	22	22
Iron wt. loss, mg	0.1	0.1	0.1	0.1	0.1	0.1
Vickers Pump Wear Test (ASTM D-2882)						
Mg Wt Loss	12	12	12	12	12	12
Foam Test (ASTM D-892)						
Sequence I	0/0	0/0	0/0	0/0	0/0	0/0
Sequence II	0/0	0/0	0/0	0/0	0/0	0/0
Sequence III	0/0	0/0	0/0	0/0	0/0	0/0
Thermal Stability (Cincinnati Milicron						
Method 68 hrs./135°C/copper steel catalyst)						
Sludge mg/100 ml	2	2	2	2	2	2
Condition of copper rod	1	1	1	1	1	1
Condition of steel rod	1	1	1	1	1	1
Air Release Properties						
Time @ 50°C/122°F	0.5	0.5	1	1	1	1
% Evaporative Loss @700°F/370.11°C						
(ASTM D-2887)	4.9%	4.9%	5.0%	5.0%	5.0%	5.0%
Denison T5D-042 Pump Test						
in wear, vane	.0094	.0094	.0094	.0094	----	----
Vickers 35VQ25 Pump Test						
Wt. loss vane, mg	5	5	5	5	----	----
Wt. loss cam, mg	11	11	11	11	----	----
Total wt. loss	16	16	16	16	----	----

Packaging: #254 HTC Supreme is available in 55 gallon drums, 30 gallon drums and 5 gallon pails.