



MORBARK ALL WEATHER HYDRAULIC FLUID



MORBARK ALL WEATHER HYDRAULIC FLUID is a superior performance, long life, anti-wear hydraulic oil designed for **all season** use in extreme conditions. MORBARK ALL WEATHER HYDRAULIC FLUID gives excellent results in a wide range of industrial machinery used in woodlands, construction, mining, public utility, and marine operations. MORBARK ALL WEATHER HYDRAULIC FLUID is recommended for year-round use in equipment that has to be started at temperatures as low as -40°F (-40°C) and it continues to perform well at operating temperatures as high as 170°F (77°C). MORBARK ALL WEATHER HYDRAULIC FLUID is the most advanced **all season** hydraulic oil on the market today. It is an exclusive blend of synthesized hydrocarbon base oils and specially selected additives that delivers outstanding performance over a very wide temperature range with an extended service life, therefore eliminating the need for seasonal oil changes.

ECONOMIC BENEFITS

By eliminating the need for seasonal hydraulic oil changes, MORBARK ALL WEATHER HYDRAULIC FLUID reduces operating costs and improves equipment reliability as follows:

- Protects against equipment failure during the wide temperature ranges.
- Reduces labor costs due to semi-annual oil changes, eliminating the need for winter and summer oils.
- Reduces inventory and maintenance costs.... one hydraulic oil all year.

PERFORMANCE BENEFITS

- Year-round use under wide extremes of temperature

- Allows hydraulic systems to start up at temperatures as low as -40°F (-40°C) under no-load conditions.
- Provides superior lubrication of hydraulic components at high operating temperatures.
- Recommended for year-round use in outdoor hydraulic systems running under severe conditions.

- Outstanding oxidation and thermal stability

- Longer oil life extends oil change intervals.
- Elimination of harmful sludge and varnish deposits, ensures continued smooth, reliable operation of hydraulic components.

- Superior anti-wear protection

- Improves equipment reliability in all hydraulic pumps operating over a wide range of pressures.

- Excellent water separability and hydrolytic stability

- Reusable, after water is removed, because MORBARK ALL WEATHER HYDRAULIC FLUID separates readily from water, without loss of performance additives.

- Improved foam and air entrainment performance

- Prevents overflowing of hydraulic oil reservoirs.
- Eliminates "sponginess" from hydraulic system operations and prevents damage due to pump cavitation.



APPLICATIONS

MORBARK ALL WEATHER HYDRAULIC FLUID is recommended for use in high pressure hydraulic systems that operate above 1,000 psi (7,000 kPa) under severe conditions and with wide extremes of temperature. MORBARK ALL WEATHER HYDRAULIC FLUID is formulated for outdoor use in woodlands, construction, mining, public utility and marine operations. MORBARK ALL WEATHER HYDRAULIC FLUID offers minimal fluid friction at very low temperatures and so allows equipment to start at winter temperatures as low as -40° F (-40° C) when usual no-load start-up procedures are followed. Under normal summer conditions, MORBARK ALL WEATHER HYDRAULIC FLUID meets upper temperature limits specified by the manufacturers of high pressure pumps. It can be used at operating temperatures as high as 170° F (77° C). MORBARK ALL WEATHER HYDRAULIC FLUID may be used in systems equipped with fine filters down to 3 micron without loss of additives or filter plugging. MORBARK ALL WEATHER HYDRAULIC FLUID is approved against the following hydraulic pump manufacturers specifications:

- Denison HF-0
- Vickers 35VQ 25
- Cincinnati Milacron P-70

MORBARK ALL WEATHER HYDRAULIC FLUID is recommended for most makes of piston, gear, and vane pumps, including those manufactured by:

- Vickers, Hagglunds-Denison, Cincinnati-Milacron, Sundstrand, Rexroth-Mannesman, Racine, Oilgear, Hydreco, and Dynex

MORBARK ALL WEATHER HYDRAULIC FLUID VISCOSITY GRADINGS

Measured on the ISO viscosity grading system (cSt @ 40° C/104° F), MORBARK ALL WEATHER HYDRAULIC FLUID is an ISO 46 grade oil.

Measured on the SAE viscosity system (cSt @ 100° C/212° F cP @ -30° C/-22° F), MORBARK ALL WEATHER HYDRAULIC FLUID is an SAE 0W-30 oil.

MORBARK ALL WEATHER HYDRAULIC FLUID OPERATING RANGE

-40°F/-40°C -17°F/-27°C to 170°F/77°C

HEALTH AND SAFETY

When used as directed, MORBARK ALL WEATHER HYDRAULIC FLUID has no adverse effects on health. Beyond normal hygiene, no special precautions are required. Material Health and Safety Data Sheets can be obtained from your Morbark representative, or by calling the number below.



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TYPICAL PERFORMANCE DATA

Density, kg/l @ 15°C	ASTM D1298	0.865
Viscosity, cSt @ 40°C	ASTM D445/2161	43.2
cSt @ 100°C		11.2
Brookfield Viscosity		
cP @ -30°C		2,400
cP @ -35°C	ASTM D2938	5,000
cP @ -40°C		10,000
Viscosity Index	ASTM D 2270	265
Flash Point, °C	ASTM D92	176
Pour Point, °C	ASTM D97	<-51
Oxidation Stability (Hours)	ASTM D943	3,500
Rust Test (Procedures A&B, 48 hrs)	ASTM D665	Pass
Pump Wear Tests		
Vickers 35VQ25	Vickers M-2950-S	Pass
Denison Vane Pump, T-50	Denison HF-0	Pass
Four-Ball Wear Test		
(1hr @ 40 kg, 1200 rpm, @ 75°C), scar diam in mm	ASTM D4172B	0.4
Water Separability, 54°C	ASTM D 1401	37-40-3 (20)