



Amalie All-Weather Hydraulic Oils contain EP agents and chemical components to control wear, oxidation, sludge, corrosion, foaming, and to promote water separation. These oils are formulated to lubricate hydraulic systems that require wear protection, rust protection, and antioxidancy. The product is specifically formulated to provide robust pump and filtration performance in excess of 5,000 hours, even in the presence of incidental water contamination. **Amalie All-Weather Hydraulic Oils** are formulated to exceed the requirements of all main pump, filter and control valve OEMs who have hydraulic lubricant specifications. These oils provide protection to hydraulic systems employing vane, gear and other types of pumps that require antiwear (boundary-type) protection.

Amalie All-Climate Multi-Vis Hydraulic Oils are high viscosity index oils formulated for applications where a wide range of temperature operation is needed. They contain EP agents and chemical components to control wear, oxidation, sludge, corrosion, foaming, and to promote water separation. These oils are formulated to lubricate hydraulic systems which require wear protection, rust protection, and antioxidancy. The product is specifically formulated to provide robust pump and filtration performance in excess of 5,000 hours, even in the presence of incidental water contamination. **Amalie All-Climate Multi-Vis Hydraulic Oils** are formulated to exceed the requirements of all main pump, filter and control valve OEMs who have hydraulic lubricant specifications. These oils provide protection to hydraulic systems employing vane, gear and other types of pumps that require antiwear (boundary-type) protection.

Amalie Ash-less Premium AW Synthetic Hydraulic Oils use full synthetic base stocks coupled with a robust ash-less additive system to form a superior multipurpose antiwear hydraulic fluid. These oils are designed for use in hydraulic systems, compressors, circulating/bearing applications and turbine applications, where either EP or non-EP use is indicated. They contain EP agents and chemical components to control wear, oxidation, sludge, corrosion, foaming, and to promote water separation. These oils are formulated to lubricate hydraulic systems which require wear protection, rust protection, and antioxidancy. The product is specifically formulated to provide robust pump and filtration performance in excess of 8,000 hours, even in the presence of incidental water contamination. **Amalie Ash-less Premium AW Synthetic Hydraulic Oils** are formulated to exceed the requirements of all main pump, filter and control valve OEMs who have hydraulic lubricant specifications. These oils provide protection to hydraulic systems employing vane, gear and other types of pumps that require antiwear (boundary-type) protection.

Amalie Biodegradable Hydraulic AW Oil is formulated to lubricate hydraulic systems that require wear protection, rust protection, and antioxidancy. This oil also exhibits strong water separation characteristics, foam inhibition, thermal stability, filterability, and hydrolytic stability. The product is specifically formulated as biodegradable oil. **Amalie Biodegradable Anti-Wear Hydraulic Oil** is formulated to operate in systems with a variety of pump, filter, and control valves where a vegetable oil based hydraulic lubricant is specified.

Amalie Paper Machine/Paper Mill Hydraulic Oils meet the most formidable challenge of equipment diversity that a hydraulic oil might encounter. Most modern paper machines have a "wet" end and "dry" end. The dryer section (a dry end) is exposed to very high temperatures of super heated steam used in the drying process and may possess hundreds of roller bearings requiring lubrications. These oils are formulated to allow very long service life, possessing excellent oxidation performance, thermal stability, good demulsibility and good rust protections. A high level of detergency has been added along with an EP agent and chemical components to control wear, oxidation, sludge, corrosion and foaming. The product is specifically formulated to provide robust pump and filtration performance in excess of 5,000 hours, even in the presence of incidental water contamination.

Amalie AW Hydraulic Oil is blended to offer performance properties for moderate service applications. These oils are suitable for a wide variety of applications where moderately inhibited oils are required. These products are suitable in pump, compressor and circulating systems. These oils contain an EP agent and chemical components to impart anti-wear, oxidation inhibition, and extreme pressure properties.

Amalie R&O/Turbine/Compressor Oils (Non-EP) are premium oils that offer superior rust protection and antioxidancy. They also exhibit strong water separation characteristics, foam inhibition, thermal stability, filterability, and hydrolytic stability. The product has been specifically formulated to provide robust filtration performance in the presence of water contamination and other common contaminants. These oils have been formulated to bring some resistance to electrostatic discharge, an important feature in dry climates or in high temperature applications. **Amalie R&O/Turbine/Compressor Oils (Non-EP)** are premium ash-less oils used in the lubrication of various compressors, turbines, circulating systems, and pumps.

Amalie R&O/Turbine/Compressor Oils (EP) are premium oils that bring superior rust protection and antioxidancy. They also exhibit strong water separation characteristics, foam inhibition, thermal stability, filterability, and hydrolytic stability. The product has specifically been formulated to provide Extreme Pressure and Anti-Wear (EP/AW) performance for systems with gear reduction drives or hydraulic systems that call for EP/AW performances. These oils are formulated with ash-less EP/AW chemistry which is designed to pass FZG and Ryder gear tests. **Amalie R&O/Turbine/Compressor Oils (EP)** oils have been formulated to bring some resistance to electrostatic discharge, an important feature in dry climates or in high temperature applications. **Amalie R&O/Turbine/Compressor Oils (EP)** are premium ash-less oils used in the lubrication of various compressors, turbines, circulating systems, and pumps. The **R&O/Turbine/Compressor (EP)** contains a non-zinc EP system, which may be used universally in all R&O/Compressor applications, and the unique performance needs of large turbine power generating units requiring such chemistry and performance.

Some performance levels are limited by viscosity grades. Please consult the Amalie Performance Application Chart, the Amalie Inspection Data Table for the appropriate Amalie product or contact your Amalie District Manager for more complete information and recommendations.

TYPICAL INSPECTION DATA –

	ISO grade	SAE* grade approx	API Gravity	Flash Point C.	Viscosity cSt@40C	Viscosity cSt@100C	Viscosity Index	Pour Point, C.
ALL WEATHER HYDRAULIC OILS	15	5	31.7	180	15.4	3.4	100	-36
	22	10	31.3	190	22.0	4.3	100	-33
	32	10	30.4	200	31.8	5.5	100	-30
	46	20	31.8	200	45.9	6.9	100	-27
	68	20	31.1	210	68.0	9.0	100	-24
	100	30	29.7	220	100	11.5	100	-18
	150	40	28.7	230	150	14.6	100	-12
ALL CLIMATE MULTI-VIS HYDRAULIC OILS	220	50	27.8	240	220	19.1	100	-9
	15	5	31.7	180	15.5	3.8	100	-40
	22	10	31.3	190	22.5	5.0	140	-40
	32	20	30.4	190	31.8	6.2	140	-40
	46	20	31.8	200	44.5	8.0	140	-40
	68	30	31.1	210	68.0	10.9	140	-40
	100	40	29.7	220	100	14.4	140	-40
ASH-LESS PREMIUM AW SYNTHETIC HYDRAULIC OILS	15	5	37.9	180	15.3	3.6	120	-42
	22	10	37.1	190	22.3	4.6	120	-42
	32	20	36.3	200	32.2	5.9	120	-42
	46	20	35.7	200	46.2	7.6	120	-42
	68	30	35.4	210	68.8	10.2	120	-42
	100	40	35.1	220	100	13.5	120	-42
BIO-DEGRADABLE HYDRAULIC AW OIL	32	20	36.3	200	32.2	5.9	100	-33
PAPER MACHINE PAPER MILL HYDRAULIC OILS	15	5	31.7	180	15.4	3.4	100	-36
	22	10	31.3	190	22.0	4.3	100	-33
	32	10	30.4	200	31.8	5.5	100	-30
	46	20	31.8	200	45.9	6.9	100	-27
	68	20	31.1	210	68.0	9.0	100	-24
	100	30	29.7	220	100	11.5	100	-18
	150	40	28.7	230	150	14.6	100	-12
AW HYDRAULIC OILS	220	50	27.8	240	220	19.1	100	-9
	32	10	22.5	200	28.8	-	-	-12
	46	20	22.0	200	42.6	-	-	-12
R & O TURBINE COMPRESSOR OILS (NON-EP)	68	20	22.0	210	63.0	-	-	-9
	32	10	30.5	200	32.0	5.3	100	-15
	46	20	29.3	200	46.0	6.8	100	-12
	68	20	29.4	210	68.0	8.7	100	-12
	100	30	21.5	220	96.0	11.2	100	-9
R & O TURBINE COMPRESSOR OILS (EP)	150	40	21.0	230	147.0	14.2	100	-9
	32	10	31.5	200	32.0	5.4	100	-15
	46	20	31.1	200	46.0	6.9	100	-12
	68	20	28.7	210	68.0	8.6	100	-12

PERFORMANCE APPLICATION CHART

SPECIFICATIONS	All Weather Hyd.	All Climate Multi-Vis Hyd.	Ash-less Premium AW Synthetic	Bio-degradable AW	Paper Mach Paper Mill AW	AW Hyd. Oils	R&O Turbine Comp. (Non-EP)	R&O Turbine Comp. (EP)
Denison HF-0,1,2	✓	✓	✓	HF-6	✓	HF-1	HF-1	✓
Vickers M-2950-S	✓	✓	✓	-	✓	-	-	✓
Vickers I-2860-S	✓	✓	✓	-	✓	-	-	✓
Cin.Lamb P-68/69/70	✓	✓	✓	-	✓	-	-	✓
Cin.Lamb P-38,54,55,57	-	-	-	-	-	-	✓	✓
US Steel 126	✓	✓	✓	-	✓	✓	-	✓
US Steel 127	✓	✓	✓	-	✓	-	-	✓
US Steel 136	✓	✓	✓	-	✓	-	-	✓
Sunstrand	✓	✓	✓	-	✓	-	-	✓
Rexroth RE 90220	✓	✓	✓	90221	✓	✓	-	✓
Racine	✓	✓	✓	-	✓	-	-	✓
Parker	✓	✓	✓	-	✓	✓	-	✓
AAMA DIN51524	Part 2	Part 2	Part 2	-	Part 2	-	Part 1	Part 1
AAMA DIN51515	-	-	-	-	-	-	✓	✓
SEB 181222	✓	✓	✓	-	✓	-	-	✓
SAE MS1004	✓	✓	✓	-	✓	-	-	✓
AFNOR NF 48-603	✓	✓	✓	-	✓	-	✓	✓
GEK 101941A	-	-	-	-	-	-	-	✓
GEK 32568E,28143A,46506D	-	-	-	-	-	-	✓	✓
BS 489	-	-	-	-	-	-	✓	✓
Mil-L-17672D	-	-	-	-	-	-	✓	-
Mil-L-17331H	-	-	-	-	-	-	-	✓
Brown HTGD90117	-	-	-	-	-	-	-	✓

The data presented in this sheet is believed to be accurate, however, Amalie Oil Company shall not be liable for it's content and makes no warranty with respect thereto.