

LABORATORY ANALYSIS



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COPELAND (MHDS)
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Department **WINDING**
Equipment No. **PREF16 PREFORMER BLOCKER-2ND PHASE (00143)**
System **Hydraulic System**
Oil Type **ENGINEERED LUBRICANTS ENLUBE 20-AW (--- GAL)**

Diagnosis

All component wear rates are normal. There is a moderate amount of particulates (2 to 100 microns in size) present in the oil. The system cleanliness is above the acceptable limit for the target ISO 4406 cleanliness code. The oil is still serviceable provided that the contaminant(s) can be reduced to acceptable levels.

Sample Information

Lab Number	New	2405-00147	2312-00762	2206-00299
Date of Sample	(Typical)	28 Apr 2024	14 Dec 2023	24 May 2022
Oil Added		UNK	UNK	UNK
Last Drain Date		--	--	--
Last Filter Service		--	--	--
Sample Point		---	---	---
Sample Status		NORMAL	SEVERE	ABNORMAL

VISCOSITY @ 100F or 40C (ASTM D-445)

SSU Vis. @ 100F	SSU	233.8	233.8	233
cSt Vis. @ 40C	cSt	46	45.28	45.13

COLOR (BASED ON ASTM D1500 STANDARDS)

Color	Scale 0-8	1.0	1.0	1
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PARTICLE COUNT (PER 1ML)

ISO CODE	ISO 4406(c)	>19/18/14	21/19/16	23/21/16	22/20/17
4 Micron & Larger	particles/ml	>5000	19,152	47,843	24,148
6 Micron & Larger	particles/ml	>2500	4,384	12,690	6,480
14 Micron & Larger	particles/ml	>160	362	630	694
21 Micron & Larger	particles/ml	>40	126	154	239
38 Micron & Larger	particles/ml	>10	6	12	30
70 Micron & Larger	particles/ml	>3	0	1	3

ICP - OILS (REPORTED IN PARTS PER MILLION)

Aluminum (Al)	ppm	<5	<5	<5
Antimony (Sb)	ppm	<5	<5	<5
Cadmium (Cd)	ppm	<5	<5	<5
Chromium (Cr)	ppm	<5	<5	<5
Cobalt (Co)	ppm	<5	<5	<5
Copper (Cu)	ppm	<5	<5	<5
Iron (Fe)	ppm	<5	<5	<5
Lead (Pb)	ppm	<5	<5	<5
Manganese (Mn)	ppm	<5	<5	<5
Molybdenum(Mo)	ppm	<5	<5	<5
Nickel (Ni)	ppm	<5	<5	<5
Silver (Ag)	ppm	<5	<5	<5
Tin (Sn)	ppm	<5	<5	<5
Titanium (Ti)	ppm	<5	<5	<5
Vanadium (V)	ppm	<5	<5	<5
Barium (Ba)	ppm	<5	<5	<5
Boron (B)	ppm	<5	<5	<5
Calcium (Ca)	ppm	68	69	70
Magnesium (Mg)	ppm	<5	<5	<5
Phosphorus(P)	ppm	518	530	497
Silicon (Si)	ppm	<5	<5	<5
Zinc (Zn)	ppm	715	624	611
Sulfur (S)	ppm	1,580	1,520	1,450

Customer Id: MOTMCA
Sample No.: EN24050147
Lab Number: 24050147
Test Package: TEST

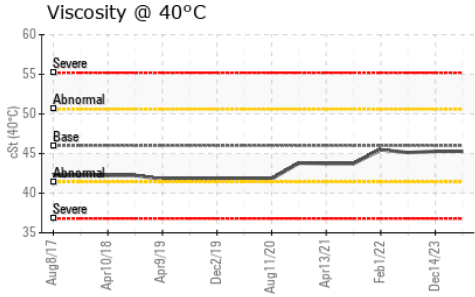


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OIL ANALYSIS REPORT



DR FERROGRAPHY READINGS

L		■ 16.6	▲ 25.0	■ 1
S		■ 5.2	■ 2.9	■ 1
WPC	DL + DS	■ 21.8	■ 27.9	■ 2

Contamination

Water	>0.05	NEG	NEG	NEG
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