



LIEBHERR

OIL ANALYSIS REPORT

WEAR	NORMAL
CONTAMINATION	NORMAL
FLUID CONDITION	NORMAL

Machine Id
145374

Component
Diesel Engine

Fluid
LIEBHERR MOTOROIL 10W-40 LOW ASH (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		LM0001041	LH05734431	---
Sample Date		Client Info		16 Mar 2024	31 Dec 2022	---
Machine Age	hrs	Client Info		5931	0	---
Oil Age	hrs	Client Info		1000	0	---
Filter Age	hrs	Client Info		1000	0	---
Oil Changed		Client Info		Changed	N/A	---
Filter Changed		Client Info		Changed	N/A	---
Sample Status				NORMAL	NORMAL	---

WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	9	6	---
Chromium	ppm	ASTM D5185m	>5	<1	<1	---
Nickel	ppm	ASTM D5185m	>5	0	0	---
Titanium	ppm	ASTM D5185m		0	0	---
Silver	ppm	ASTM D5185m	>3	<1	<1	---
Aluminum	ppm	ASTM D5185m	>15	2	4	---
Lead	ppm	ASTM D5185m	>30	<1	2	---
Copper	ppm	ASTM D5185m	>125	6	3	---
Tin	ppm	ASTM D5185m	>5	<1	<1	---
Vanadium	ppm	ASTM D5185m		0	0	---
White Metal	scalar	*Visual	NONE	NONE	NONE	---
Yellow Metal	scalar	*Visual	NONE	NONE	NONE	---

CONTAMINATION

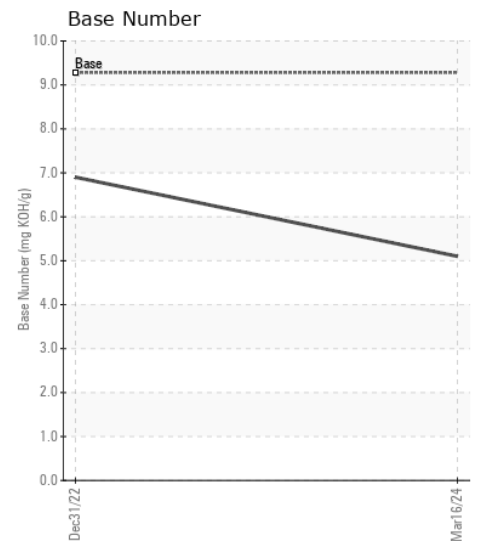
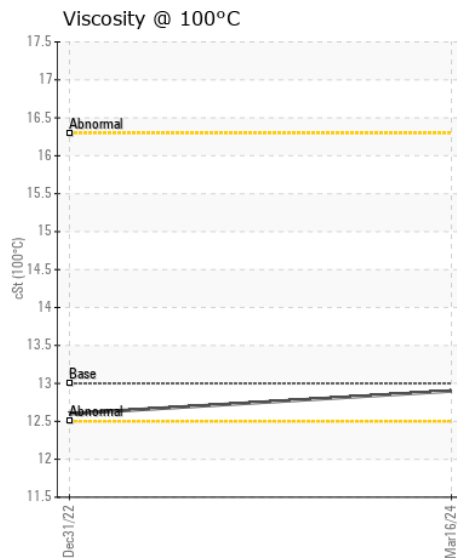
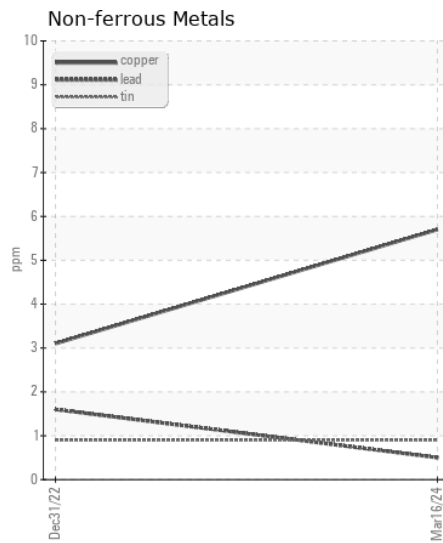
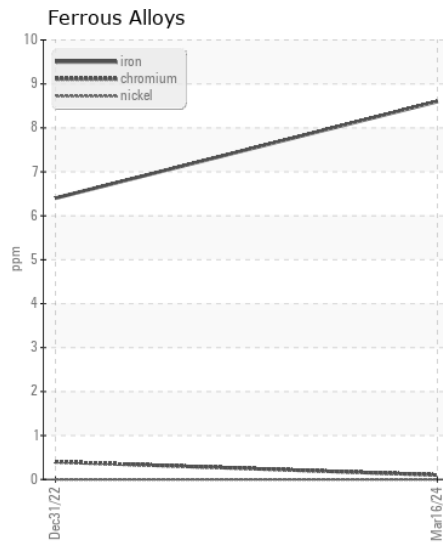
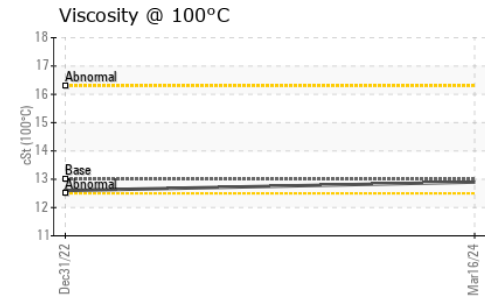
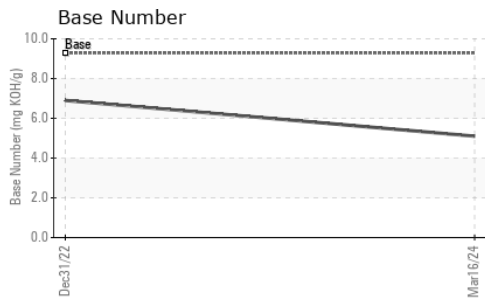
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>60	10	7	---
Potassium	ppm	ASTM D5185m	>20	2	2	---
Fuel		WC Method	>5	<1.0	<1.0	---
Water		WC Method	>0.2	NEG	NEG	---
Glycol		WC Method		NEG	NEG	---
Soot %	%	*ASTM D7844	>3	0.2	0.1	---
Nitration	Abs/cm	*ASTM D7624	>20	10.8	10.5	---
Sulfation	Abs/.1mm	*ASTM D7415	>30	22.6	20.5	---
Silt	scalar	*Visual	NONE	NONE	NONE	---
Debris	scalar	*Visual	NONE	NONE	NONE	---
Sand/Dirt	scalar	*Visual	NONE	NONE	NONE	---
Appearance	scalar	*Visual	NORML	NORML	NORML	---
Odor	scalar	*Visual	NORML	NORML	NORML	---
Emulsified Water	scalar	*Visual	>0.2	NEG	NEG	---

FLUID CONDITION

The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

Sodium	ppm	ASTM D5185m		3	3	---
Boron	ppm	ASTM D5185m	169	49	87	---
Barium	ppm	ASTM D5185m	0	0	0	---
Molybdenum	ppm	ASTM D5185m	2	3	3	---
Manganese	ppm	ASTM D5185m	<1	1	<1	---
Magnesium	ppm	ASTM D5185m	724	832	708	---
Calcium	ppm	ASTM D5185m	1323	1395	1673	---
Phosphorus	ppm	ASTM D5185m	678	783	758	---
Zinc	ppm	ASTM D5185m	776	881	914	---
Sulfur	ppm	ASTM D5185m	2859	3894	3808	---
Oxidation	Abs/.1mm	*ASTM D7414	>25	23.1	20.7	---
Base Number (BN)	mg KOH/g	ASTM D2896	9.28	5.1	6.9	---
Visc @ 100°C	cSt	ASTM D445	13.0	12.9	12.6	---



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : LM0001041

Lab Number : 06125562

Unique Number : 10939713

Test Package : CONST (Additional Tests: TBN)

Received : 21 Mar 2024

Tested : 22 Mar 2024

Diagnosed : 22 Mar 2024 - Wes Davis

LIEBHERR USA CO - Maritime Cranes

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HIALEAH GARDENS, FL

US 33018

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F:

To discuss this sample report, contact Customer Service at 1-800-237-1369.

* - Denotes test methods that are outside of the ISO 17025 scope of accreditation.

Statements of conformity to specifications are based on the simple acceptance decision rule (JCGM 106:2012)