



# LIEBHERR

## OIL ANALYSIS REPORT

WEAR	<b>NORMAL</b>
CONTAMINATION	<b>NORMAL</b>
FLUID CONDITION	<b>NORMAL</b>

Machine Id  
**MS18**  
Component  
**Diesel Engine**  
Fluid  
**DIESEL ENGINE OIL SAE 40 (--- GAL)**

### RECOMMENDATION

Resample at the next service interval to monitor.

Test	UOM	Method	Limit/Abn	Current	History1	History2
Sample Number		Client Info		<b>LH0244834</b>	LHMC99037	LHMC131456
Sample Date		Client Info		<b>21 Mar 2024</b>	01 Dec 2023	03 Aug 2023
Machine Age	hrs	Client Info		<b>6118</b>	5393	4388
Oil Age	hrs	Client Info		<b>0</b>	0	0
Filter Age	hrs	Client Info		<b>0</b>	0	0
Oil Changed		Client Info		<b>Changed</b>	Changed	Changed
Filter Changed		Client Info		<b>Changed</b>	N/A	N/A
Sample Status				<b>NORMAL</b>	NORMAL	NORMAL

### WEAR

All component wear rates are normal.

Iron	ppm	ASTM D5185m	>100	<b>30</b>	25	16
Chromium	ppm	ASTM D5185m	>20	<b>&lt;1</b>	<1	<1
Nickel	ppm	ASTM D5185m	>4	<b>&lt;1</b>	<1	0
Titanium	ppm	ASTM D5185m		<b>&lt;1</b>	<1	0
Silver	ppm	ASTM D5185m	>3	<b>0</b>	0	0
Aluminum	ppm	ASTM D5185m	>20	<b>3</b>	<1	<1
Lead	ppm	ASTM D5185m	>40	<b>0</b>	0	<1
Copper	ppm	ASTM D5185m	>330	<b>2</b>	2	2
Tin	ppm	ASTM D5185m	>15	<b>&lt;1</b>	<1	0
Vanadium	ppm	ASTM D5185m		<b>&lt;1</b>	0	0
White Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Yellow Metal	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE

### CONTAMINATION

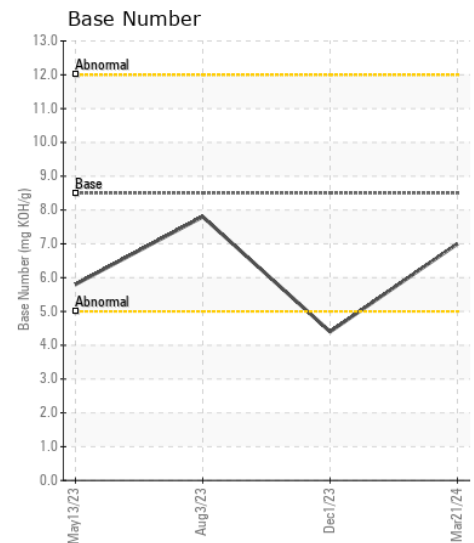
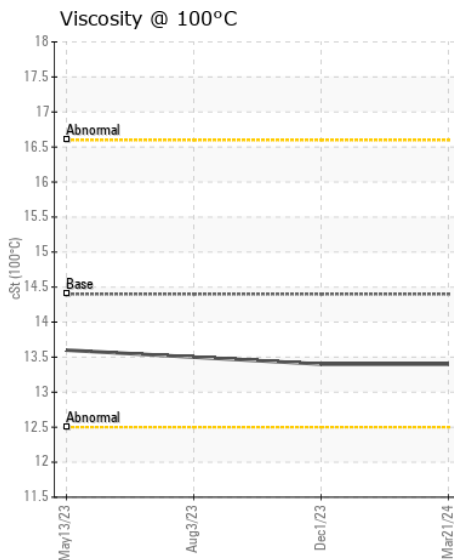
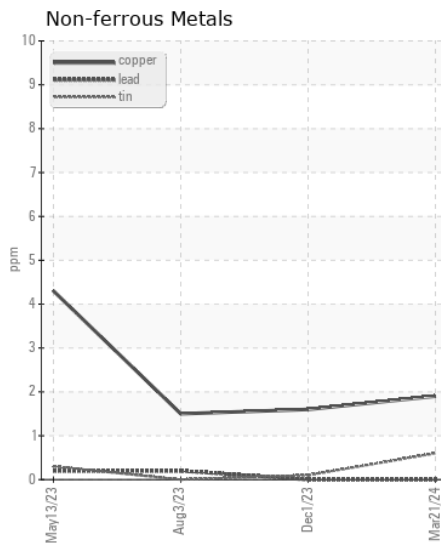
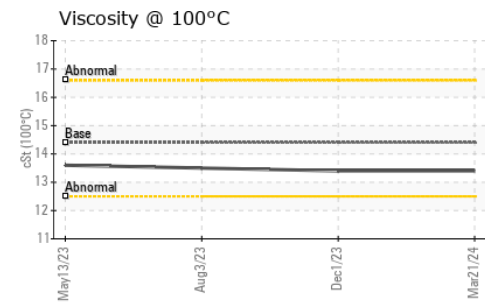
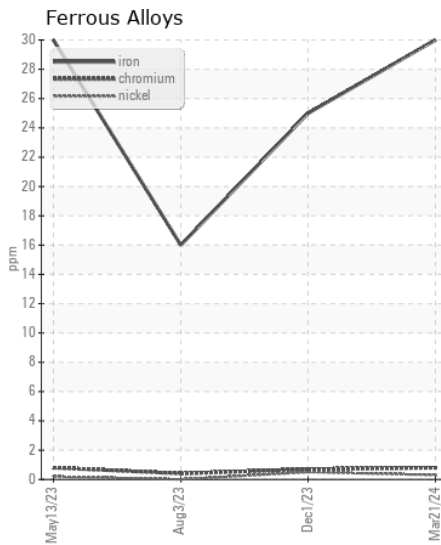
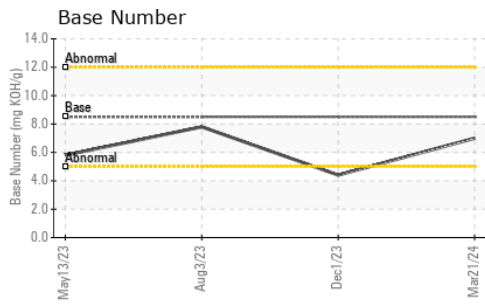
There is no indication of any contamination in the oil.

Silicon	ppm	ASTM D5185m	>25	<b>6</b>	4	3
Potassium	ppm	ASTM D5185m	>20	<b>3</b>	2	2
Fuel		WC Method	>5	<b>&lt;1.0</b>	<1.0	<1.0
Water		WC Method	>0.2	<b>NEG</b>	NEG	NEG
Glycol		WC Method		<b>NEG</b>	NEG	NEG
Soot %	%	*ASTM D7844	>3	<b>0.3</b>	0.5	0.4
Nitration	Abs/cm	*ASTM D7624	>20	<b>9.4</b>	9.6	8.5
Sulfation	Abs/.1mm	*ASTM D7415	>30	<b>20.5</b>	20.9	19.4
Silt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Debris	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Sand/Dirt	scalar	*Visual	NONE	<b>NONE</b>	NONE	NONE
Appearance	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Odor	scalar	*Visual	NORML	<b>NORML</b>	NORML	NORML
Emulsified Water	scalar	*Visual	>0.2	<b>NEG</b>	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	>216	<b>2</b>	1	1
Boron	ppm	ASTM D5185m	250	<b>12</b>	8	9
Barium	ppm	ASTM D5185m	10	<b>2</b>	3	0
Molybdenum	ppm	ASTM D5185m	100	<b>94</b>	59	59
Manganese	ppm	ASTM D5185m		<b>&lt;1</b>	<1	<1
Magnesium	ppm	ASTM D5185m	450	<b>1441</b>	927	971
Calcium	ppm	ASTM D5185m	3000	<b>1855</b>	1188	1308
Phosphorus	ppm	ASTM D5185m	1150	<b>1456</b>	994	1033
Zinc	ppm	ASTM D5185m	1350	<b>1975</b>	1286	1360
Sulfur	ppm	ASTM D5185m	4250	<b>4918</b>	3276	3695
Oxidation	Abs/.1mm	*ASTM D7414	>25	<b>17.5</b>	17.8	15.4
Base Number (BN)	mg KOH/g	ASTM D2896	8.5	<b>7.0</b>	4.4	7.8
Visc @ 100°C	cSt	ASTM D445	14.4	<b>13.4</b>	13.4	13.5



Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513  
**Sample No.** : LH0244834 **Received** : 21 Mar 2024  
**Lab Number** : 06125371 **Tested** : 25 Mar 2024  
**Unique Number** : 10939522 **Diagnosed** : 25 Mar 2024 - Sean Felton  
**Test Package** : CONST ( Additional Tests: TBN )

**OSCAR WINSKI CO. INC**  
 2407 N. 9TH STREET  
 LAFAYETTE, IN  
 US 47904  
 Contact: JAYSON FRAZIER  
 frazierj@oscarwinski.com

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)

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F: x: