

# LIEBHERR

## CONSTRUCTION EQUIPMENT



### MS19 - Diesel Engine

Sample No: LH0244792

Oil Type: DIESEL ENGINE OIL SAE 40



#### Sample Information

Sample Number	LH0244792	LH0244651	LHMC131497	---
Sample Date	08 Feb 2024	08 Dec 2023	03 Aug 2023	---
Machine Hours	3903	3512	2706	---
Oil Hours	500	0	0	---
Oil Changed	Changed	Changed	Changed	---
Sample Status	NORMAL	NORMAL	NORMAL	---

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#### Oil Condition

Visc @ 100°C	cSt	14.2	14.2	14.1	---
Base Number (BN)	mg KOH/g	8.5	6.7	7.5	---
Oxidation (PA)	%	59	78	77	---

#### Diagnosis

Resample at the next service interval to monitor. Please specify the component make and model with your next sample. Please specify the brand, type, and viscosity of the oil on your next sample. All component wear rates are normal. There is no indication of any contamination in the oil. The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.



#### Contamination

Water	%	NEG	NEG	NEG	---
Soot %	%	0.2	0.4	0.4	---
Nitration (PA)	%	56	87	87	---
Sulfation (PA)	%	50	62	61	---
Glycol	%	NEG	NEG	NEG	---
Fuel	%	<1.0	<1.0	<1.0	---
Silicon	ppm	5	3	4	---
Sodium	ppm	4	0	1	---
Potassium	ppm	5	2	2	---



#### Wear Metals

Iron	ppm	11	20	18	---
Copper	ppm	<1	2	<1	---
Lead	ppm	2	0	<1	---
Tin	ppm	2	0	0	---
Aluminum	ppm	2	2	<1	---
Chromium	ppm	1	<1	<1	---
Molybdenum	ppm	4	62	67	---
Nickel	ppm	<1	0	0	---
Titanium	ppm	77	0	<1	---
Silver	ppm	<1	0	0	---
Manganese	ppm	1	0	<1	---
Vanadium	ppm	<1	0	0	---



#### Additives

Calcium	ppm	1886	1233	1960	---
Magnesium	ppm	453	917	572	---
Zinc	ppm	1308	1283	1440	---
Phosphorus	ppm	1073	977	1095	---
Barium	ppm	0	0	0	---
Boron	ppm	107	9	57	---

Depot: OSCLAF

Unique No: 11016696

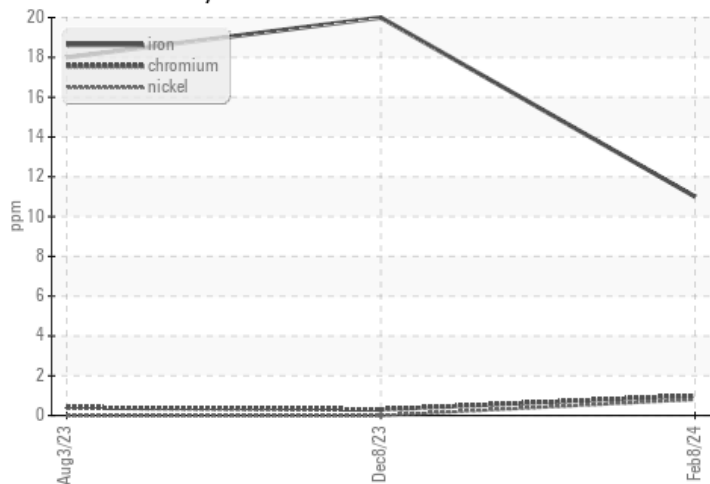
Signed: Wes Davis

Report Date: 07 May 2024

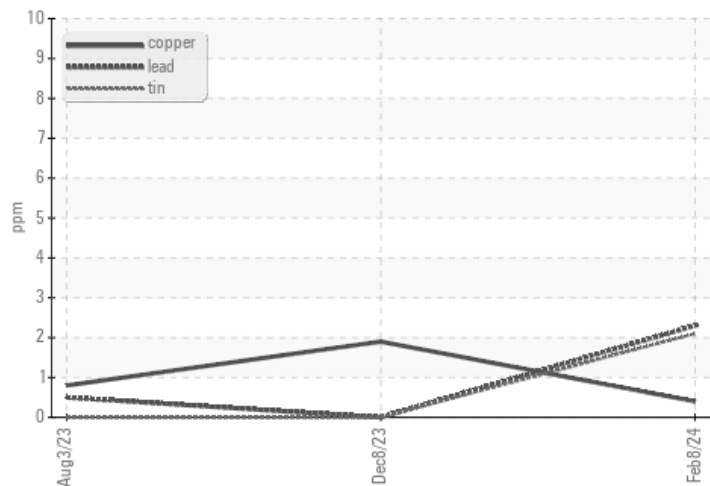


### Graphs

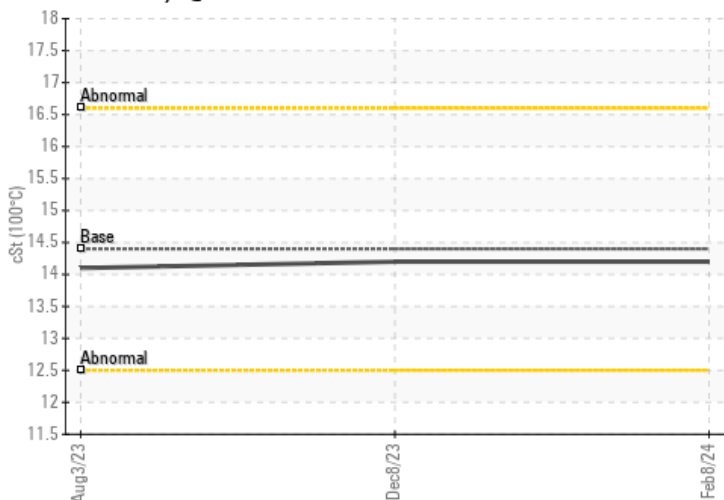
Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



Base Number

