

# LIEBHERR

## CONSTRUCTION EQUIPMENT



### MS19 - Diesel Engine

Sample No: LH0244796

Oil Type: DIESEL ENGINE OIL SAE 40



#### Sample Information

Sample Number	LH0244796	LH0244792	LH0244651	LHMC131497
Sample Date	29 Jun 2024	08 Feb 2024	08 Dec 2023	03 Aug 2023
Machine Hours	4621	3903	3512	2706
Oil Hours	0	500	0	0
Oil Changed	Changed	Changed	Changed	Changed
Sample Status	NORMAL	NORMAL	NORMAL	NORMAL

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#### Oil Condition

Visc @ 100°C	cSt	14.9	14.2	14.2	14.1
Base Number (BN)	mg KOH/g	6.7	8.5	6.7	7.5
Oxidation (PA)	%	100	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	NEG
Soot %	%	0.7	0.2	0.4	0.4
Nitration (PA)	%	104	56	87	87
Sulfation (PA)	%	73	50	62	61
Glycol	%	NEG	NEG	NEG	NEG
Fuel	%	<1.0	<1.0	<1.0	<1.0
Silicon	ppm	3	5	3	4
Sodium	ppm	3	4	0	1
Potassium	ppm	0	5	2	2



#### Wear Metals

Iron	ppm	26	11	20	18
Copper	ppm	2	<1	2	<1
Lead	ppm	0	2	0	<1
Tin	ppm	0	2	0	0
Aluminum	ppm	1	2	2	<1
Chromium	ppm	<1	1	<1	<1
Molybdenum	ppm	66	4	62	67
Nickel	ppm	0	<1	0	0
Titanium	ppm	0	77	0	<1
Silver	ppm	0	<1	0	0
Manganese	ppm	<1	1	0	<1
Vanadium	ppm	0	<1	0	0



#### Additives

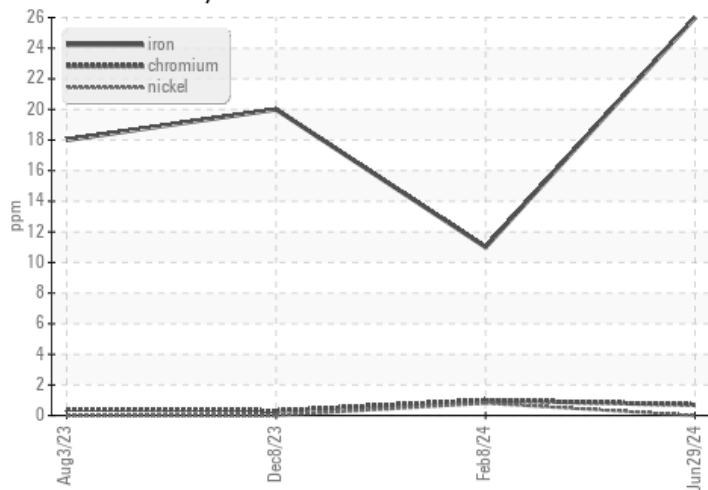
Calcium	ppm	1371	1886	1233	1960
Magnesium	ppm	1032	453	917	572
Zinc	ppm	1392	1308	1283	1440
Phosphorus	ppm	1134	1073	977	1095
Barium	ppm	0	0	0	0
Boron	ppm	2	107	9	57

**Depot:** OSCLAF  
**Unique No:** 11123123  
**Signed:** Wes Davis  
**Report Date:** 12 Jul 2024

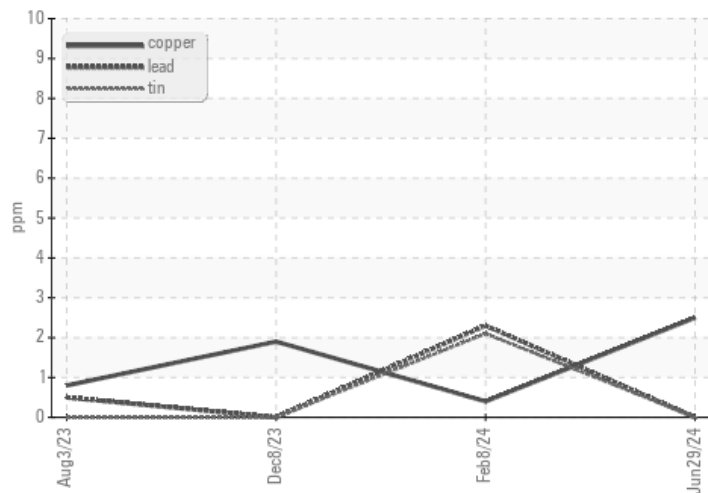


### Graphs

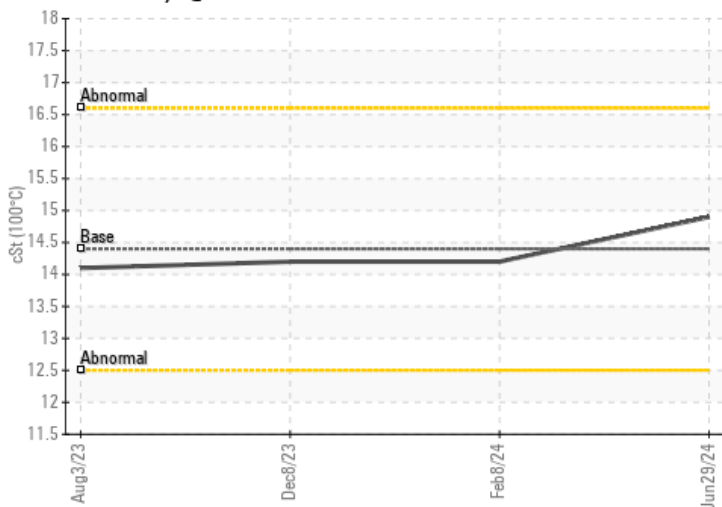
#### Ferrous Alloys



#### Non-ferrous Metals



#### Viscosity @ 100°C



#### Base Number

