

LIEBHERR

CONSTRUCTION EQUIPMENT



LIEBHERR R946 035496-1150 - Diesel Engine

Sample No: LH0254589

Oil Type: DIESEL ENGINE OIL SAE 5W40



SAMPLE INFORMATION

Sample Number	LH0254589	LH0243562	LHMC72752	---
Sample Date	20 Aug 2023	07 Apr 2023	20 Nov 2017	---
Machine Hours	1809	13412	500	---
Oil Hours	0	500	0	---
Oil Changed	Changed	Changed	Changed	---
Sample Status	ABNORMAL	NORMAL	NORMAL	---

FINKBINER EQUIPMENT CO.

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OIL CONDITION

Visc @ 100°C	cSt	13.8	13.3	14.15	---
Base Number (BN)	mg KOH/g	6.7	7.0	---	---
Oxidation (PA)	%	89	53	52	---



CONTAMINATION

Soot %	%	2.2	1.5	0.1	---
Nitration (PA)	%	112	67	50	---
Sulfation (PA)	%	78	56	53	---
Glycol	%	NEG	NEG	NEG	---
Fuel	%	<1.0	<1.0	<1.0	---
Silicon	ppm	11	7	9	---
Sodium	ppm	6	3	2	---
Potassium	ppm	7	2	2	---

Diagnosis

Oil and filter change at the time of sampling has been noted. Resample at the next service interval to monitor. Piston and cylinder wear is indicated. 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.



WEAR METALS

Iron	ppm	112	18	86	---
Copper	ppm	18	2	49	---
Lead	ppm	9	2	0	---
Tin	ppm	2	<1	3	---
Aluminum	ppm	16	1	8	---
Chromium	ppm	2	<1	1	---
Molybdenum	ppm	23	19	67	---
Nickel	ppm	<1	0	<1	---
Titanium	ppm	3	<1	0	---
Silver	ppm	0	0	<1	---
Manganese	ppm	2	<1	2	---
Vanadium	ppm	<1	0	0	---



ADDITIVES

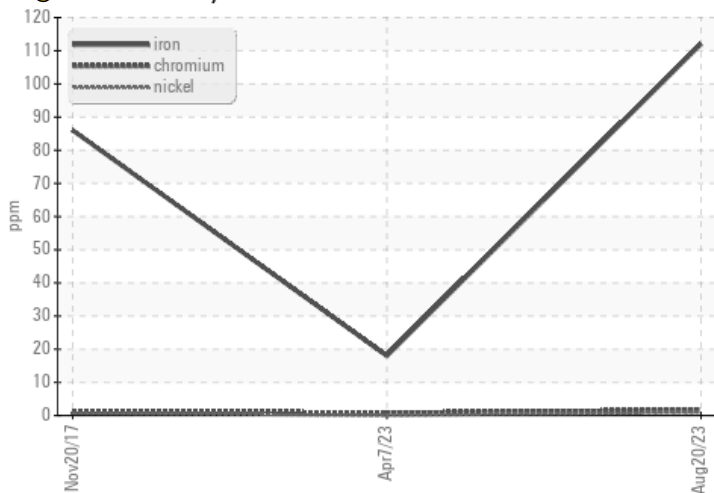
Calcium	ppm	1742	1424	1311	---
Magnesium	ppm	665	559	383	---
Zinc	ppm	1075	961	951	---
Phosphorus	ppm	865	795	900	---
Barium	ppm	0	0	3	---
Boron	ppm	12	75	251	---

Depot: LEC0033
Unique No: 10615413
Signed: Jonathan Hester
Report Date: 23 Aug 2023

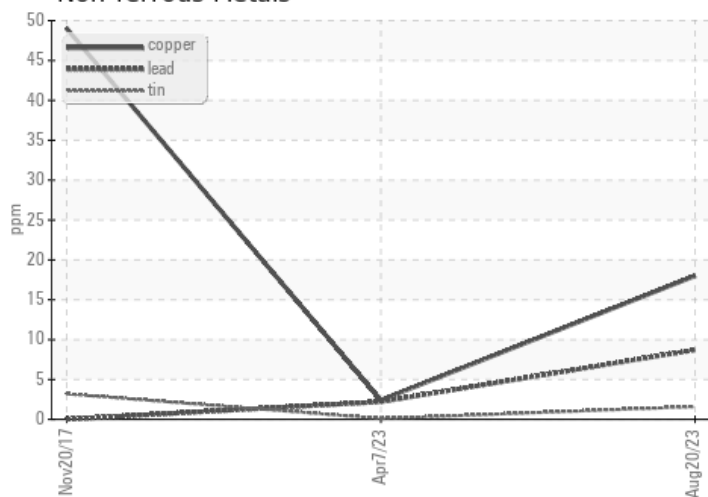


GRAPHS

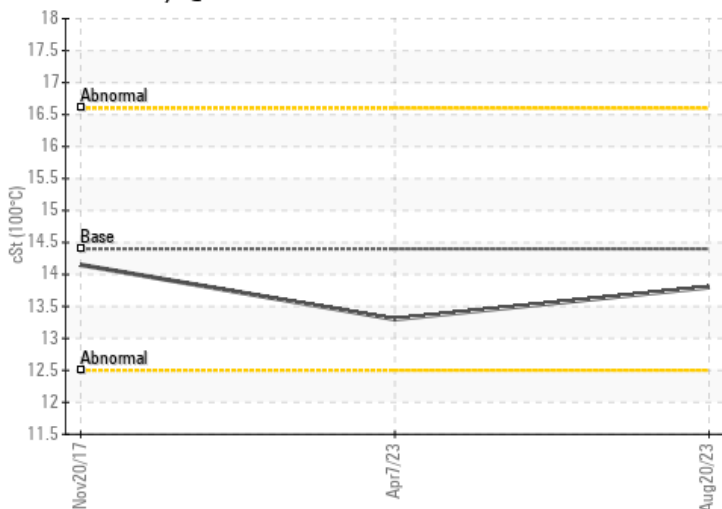
● Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C



Base Number

