LIEBHERR
CONSTRUCTION EQUIPMENT

LIEBHERR TA230 144017-1513 - Diesel Engine

Sample No: LH0268555

Oil Type: LIEBHERR MOTOROIL 5W-30 LOW ASH

LIEBHERR EQUIPMENT SOURCE
8200 FAYETTEVILLE ROAD
RALEIGH, NC
US 27603
Contact: TRAVIS EGAN
travis.egan@liebherr.com
T:
F: (919)329-0084

SAMPLE INFORMATION

Sample Number		**LH0268555**	---	---	---
Sample Date		**11 Oct 2023**	---	---	---
Machine Hours		**1356**	---	---	---
Oil Hours		**671**	---	---	---
Oil Changed		**Changed**	---	---	---
Sample Status		**ABNORMAL**	---	---	---

OIL CONDITION

Visc @ 100°C	cSt	**11.2**	---	---	---
Base Number (BN)	mg KOH/g	**6.1**	---	---	---
Oxidation (PA)	%	**67**	---	---	---

CONTAMINATION

Soot %	%	**0.1**	---	---	---
Nitration (PA)	%	**73**	---	---	---
Sulfation (PA)	%	**55**	---	---	---
Glycol	%	**NEG**	---	---	---
Fuel	%	**<1.0**	---	---	---
Silicon	ppm	**5**	---	---	---
Sodium	ppm	**2**	---	---	---
Potassium	ppm	**4**	---	---	---

WEAR METALS

Iron	ppm	**7**	---	---	---
Copper	ppm	**285**	---	---	---
Lead	ppm	**<1**	---	---	---
Tin	ppm	**<1**	---	---	---
Aluminum	ppm	**0**	---	---	---
Chromium	ppm	**<1**	---	---	---
Molybdenum	ppm	**5**	---	---	---
Nickel	ppm	**<1**	---	---	---
Titanium	ppm	**<1**	---	---	---
Silver	ppm	**0**	---	---	---
Manganese	ppm	**1**	---	---	---
Vanadium	ppm	**0**	---	---	---

ADDITIVES

Calcium	ppm	**1199**	---	---	---
Magnesium	ppm	**639**	---	---	---
Zinc	ppm	**736**	---	---	---
Phosphorus	ppm	**663**	---	---	---
Barium	ppm	**9**	---	---	---
Boron	ppm	**64**	---	---	---

Diagnosis

The oil change at the time of sampling has been noted. Resample at the next service interval to monitor.The copper level is abnormal. In the absence of other significant wear metals, suspect copper due to sources other than wear (i.e. cooling core). 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.

Depot: LIEBHERRNC
Unique No: 10696680
Signed: Jonathan Hester
Report Date: 17 Oct 2023

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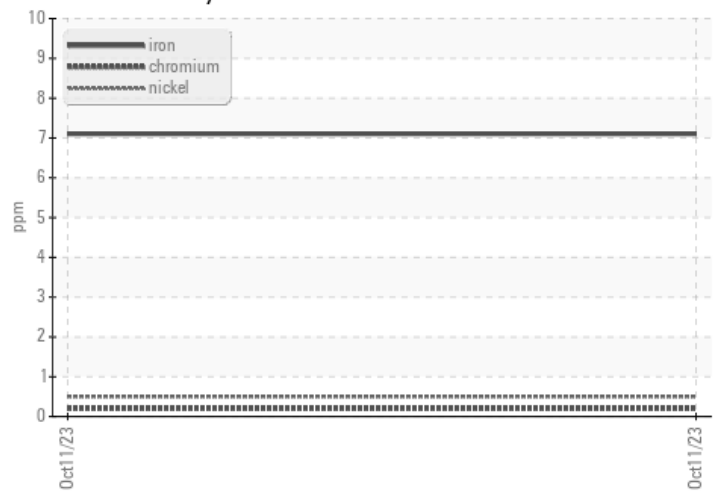
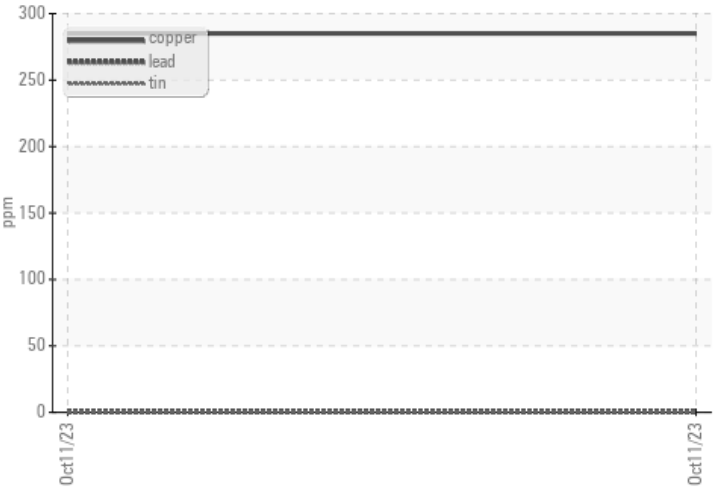
CONSTRUCTION EQUIPMENT

GRAPHS

Ferrous Alloys



Non-ferrous Metals



Viscosity @ 100°C

Base Number