CONST

# LIEBHERR

OIL ANALYSIS REPORT

| | |
|---|---|
| WEAR | NORMAL |
| CONTAMINATION | NORMAL |
| FLUID CONDITION | NORMAL |

Machine Id
## LIEBHERR LH50 121388-1216
Component
## Diesel Engine
Fluid
## DIESEL ENGINE OIL SAE 5W40 (--- GAL)

## RECOMMENDATION

Resample at the next service interval to monitor. Please specify the brand, type, and viscosity of the oil on your next sample.

## WEAR

Metal levels are typical for a new component breaking in.

## CONTAMINATION

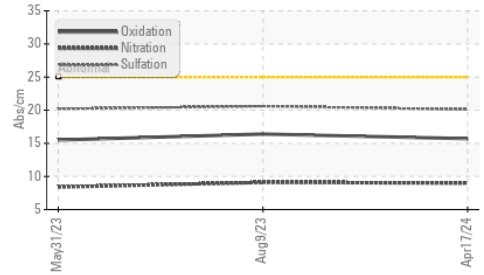
There is no indication of any contamination in the oil.

## FLUID CONDITION

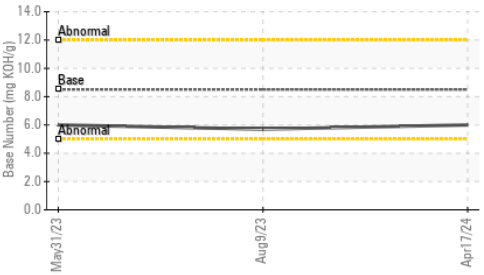
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | LH0258856 | LH0254653 | LH0254383 |
| Sample Date | | Client Info | | 17 Apr 2024 | 09 Aug 2023 | 31 May 2023 |
| Machine Age | hrs | Client Info | | 500 | 477 | 1409 |
| Oil Age | hrs | Client Info | | 500 | 0 | 500 |
| Filter Age | hrs | Client Info | | 0 | 0 | 500 |
| Oil Changed | | Client Info | | Changed | Changed | Changed |
| Filter Changed | | Client Info | | Changed | Changed | Changed |
| Sample Status | | | | NORMAL | ABNORMAL | ABNORMAL |
| Iron | ppm | ASTM D5185m | >66 | 3 | 4 | 4 |
| Chromium | ppm | ASTM D5185m | >4 | 0 | 0 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | 0 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | <1 | 1 | <1 |
| Silver | ppm | ASTM D5185m | >3 | 0 | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >8 | <1 | 0 | <1 |
| Lead | ppm | ASTM D5185m | >10 | 0 | 0 | 1 |
| Copper | ppm | ASTM D5185m | >74 | 1 | ▲ 107 | ▲ 127 |
| Tin | ppm | ASTM D5185m | >4 | 0 | 0 | <1 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Silicon | ppm | ASTM D5185m | >15 | 8 | 8 | 9 |
| Potassium | ppm | ASTM D5185m | >20 | 2 | 1 | 2 |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | 1.5 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | >3 | 0.1 | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 9.0 | 9.1 | 8.4 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 20.1 | 20.6 | 20.2 |
| Silt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Debris | scalar | *Visual | NONE | NONE | NONE | NONE |
| Sand/Dirt | scalar | *Visual | NONE | NONE | NONE | NONE |
| Appearance | scalar | *Visual | NORML | NORML | NORML | NORML |
| Odor | scalar | *Visual | NORML | NORML | NORML | NORML |
| Emulsified Water | scalar | *Visual | >0.2 | NEG | NEG | NEG |
| Sodium | ppm | ASTM D5185m | >44 | 2 | 2 | 2 |
| Boron | ppm | ASTM D5185m | 250 | 59 | 43 | 91 |
| Barium | ppm | ASTM D5185m | 10 | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 100 | 5 | 16 | 20 |
| Manganese | ppm | ASTM D5185m | | 0 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 450 | 688 | 707 | 688 |
| Calcium | ppm | ASTM D5185m | 3000 | 1414 | 1284 | 1405 |
| Phosphorus | ppm | ASTM D5185m | 1150 | 779 | 703 | 723 |
| Zinc | ppm | ASTM D5185m | 1350 | 867 | 825 | 865 |
| Sulfur | ppm | ASTM D5185m | 4250 | 3555 | 3340 | 3333 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 15.7 | 16.4 | 15.5 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 8.5 | 6.0 | 5.7 | 6.0 |
| Visc @ 100°C | cSt | ASTM D445 | 14.4 | 12.9 | 12.7 | ● 12.0 |

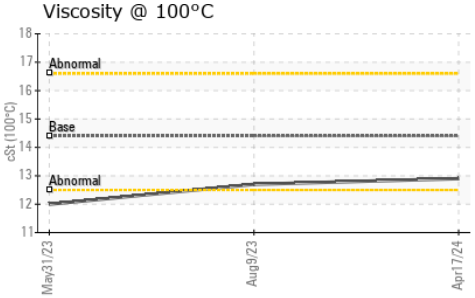
FT-IR (Direct Trend)



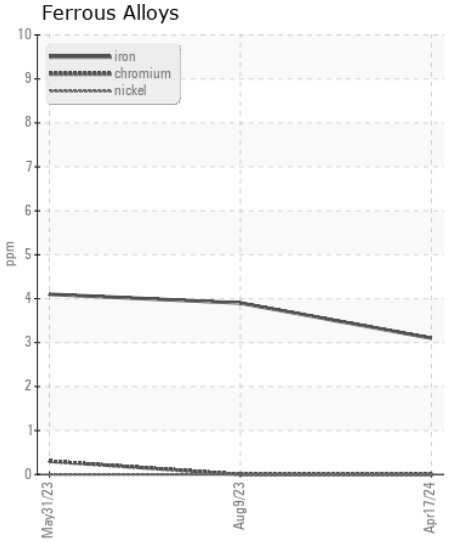

Base Number



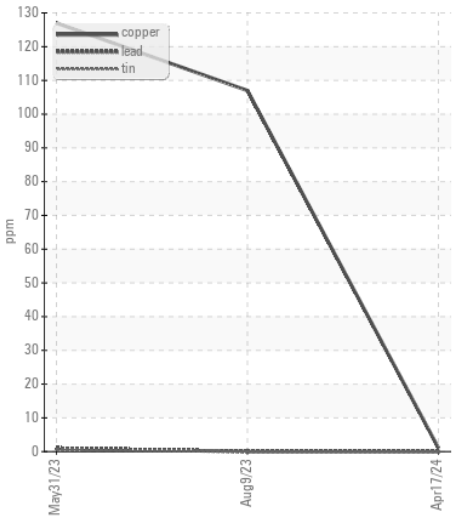

Viscosity @ 100°C



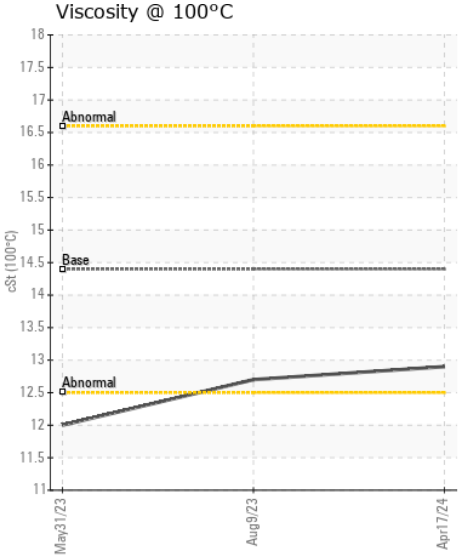

Ferrous Alloys




Non-ferrous Metals




Viscosity @ 100°C

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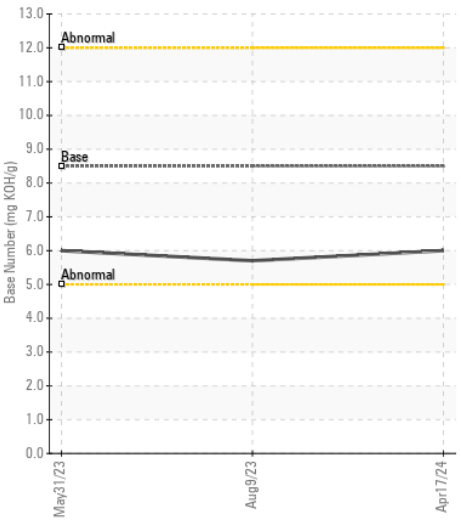


Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : LH0258856
**Lab Number** : 06159745
**Unique Number** : 10995168
**Test Package** : CONST ( Additional Tests: TBN )

**Received** : 24 Apr 2024
**Tested** : 25 Apr 2024
**Diagnosed** : 25 Apr 2024 - Wes Davis

**UNITED SCRAP**
1545 S CICERO AVE
BURR RIDGE, IL
US 60527
Contact: Service Manager

*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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