



LIEBHERR

OIL ANALYSIS REPORT

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



Machine Id
LIEBHERR R954CEW 026763-783
Component
Diesel Engine
Fluid
MOBIL 15W40 (10 GAL)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | LH0243768 | LH0191222 | LH0243687 |
| Sample Date | | Client Info | | 16 May 2024 | 06 Mar 2023 | 27 Feb 2023 |
| Machine Age | hrs | Client Info | | 18459 | 18241 | 18231 |
| Oil Age | hrs | Client Info | | 218 | 10 | 192 |
| Filter Age | hrs | Client Info | | 218 | 10 | 192 |
| Oil Changed | | Client Info | | Changed | Not Changd | Changed |
| Filter Changed | | Client Info | | Changed | Not Changed | Changed |
| Sample Status | | | | NORMAL | NORMAL | ATTENTION |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >100 | 12 | 2 | 8 |
| Chromium | ppm | ASTM D5185m | >5 | 0 | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >5 | 0 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | <1 | <1 | 1 |
| Silver | ppm | ASTM D5185m | >3 | 0 | 0 | <1 |
| Aluminum | ppm | ASTM D5185m | >15 | 2 | <1 | 3 |
| Lead | ppm | ASTM D5185m | >30 | <1 | <1 | <1 |
| Copper | ppm | ASTM D5185m | >125 | 16 | 7 | 51 |
| Tin | ppm | ASTM D5185m | >5 | <1 | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | 0 | 0 | <1 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

CONTAMINATION

There is no indication of any contamination in the oil.

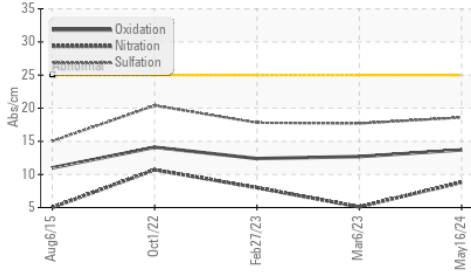
| | | | | | | |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon | ppm | ASTM D5185m | >60 | 7 | 6 | 7 |
| Potassium | ppm | ASTM D5185m | >20 | 4 | <1 | 2 |
| Fuel | % | ASTM D3524 | >5 | <1.0 | <1.0 | 0.8 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | >3 | 0.3 | 0.1 | 0.2 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 8.8 | 5.1 | 8.0 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 18.6 | 17.7 | 17.8 |
| 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 |

FLUID CONDITION

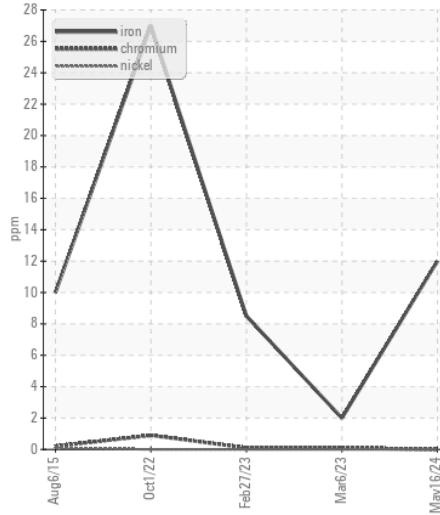
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| | | | | | | |
|------------------|----------|-------------|------|-------------|------|------|
| Sodium | ppm | ASTM D5185m | >118 | 5 | 1 | 6 |
| Boron | ppm | ASTM D5185m | | 76 | 19 | 92 |
| Barium | ppm | ASTM D5185m | | 0 | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 13 | 50 | <1 |
| Manganese | ppm | ASTM D5185m | | 1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | | 831 | 925 | 624 |
| Calcium | ppm | ASTM D5185m | | 1303 | 1139 | 1486 |
| Phosphorus | ppm | ASTM D5185m | | 829 | 978 | 739 |
| Zinc | ppm | ASTM D5185m | | 919 | 1212 | 857 |
| Sulfur | ppm | ASTM D5185m | | 3363 | 3788 | 3226 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 13.7 | 12.7 | 12.4 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | | 7.4 | 9.8 | 7.5 |
| Visc @ 100°C | cSt | ASTM D445 | | 12.4 | 14.5 | 12.0 |

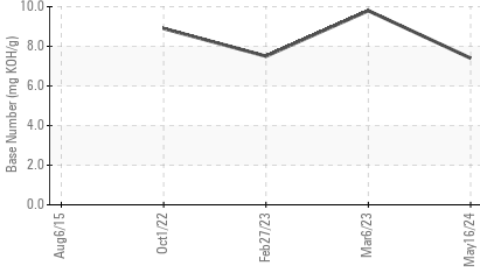
FT-IR (Direct Trend)



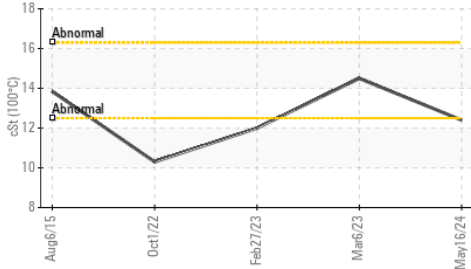
Ferrous Alloys



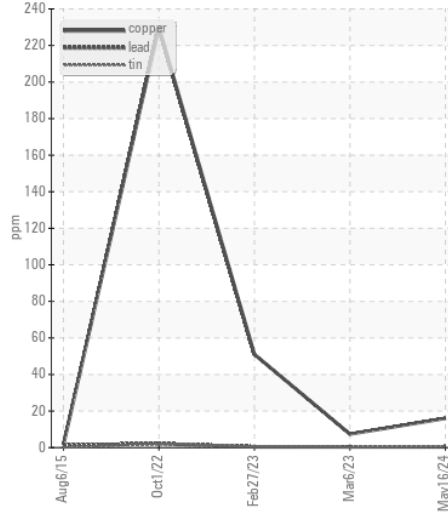
Base Number



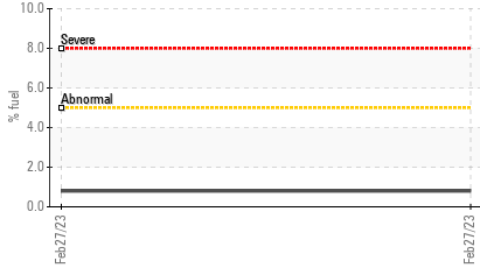
Viscosity @ 100°C



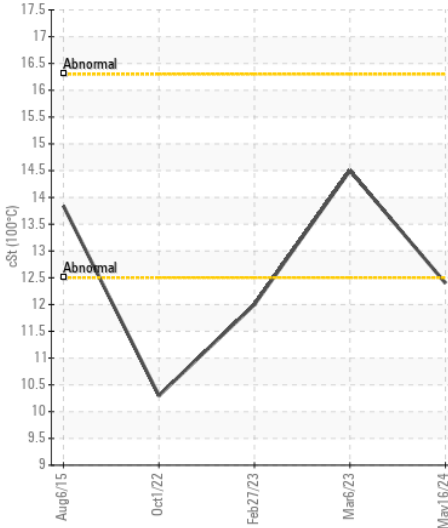
Non-ferrous Metals



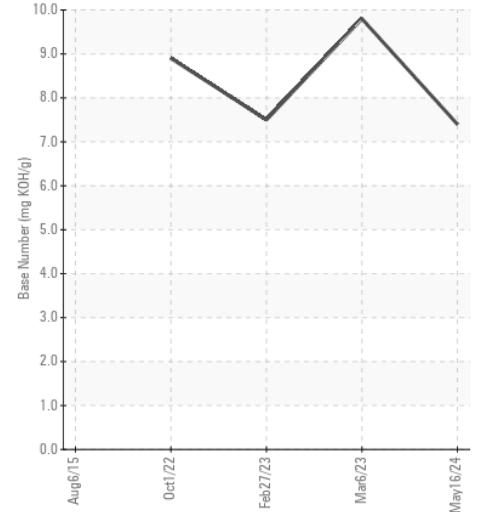
Fuel Dilution



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513
Sample No. : LH0243768
Lab Number : 06193388
Unique Number : 11050140
Test Package : CONST (Additional Tests: FuelDilution, PercentFuel, TBN)

Received : 28 May 2024
Tested : 30 May 2024
Diagnosed : 30 May 2024 - Jonathan Hester

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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)