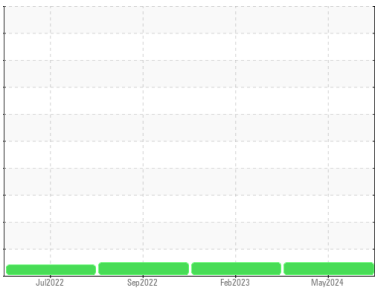
McCLUNG LOGAN EQUIPMENT COMPANY

# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
## VOLVO LC450 1017
Component
**Diesel Engine**
Fluid
**CHEVRON DELO 400 MULTIGRADE 15W40 (--- GAL)**

## DIAGNOSIS

**Recommendation**
Resample at the next service interval to monitor.

**Wear**
All component wear rates are normal.

**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.

| SAMPLE INFORMATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Sample Number | | Client Info | | **ML0001478** | VCP397990 | VCP388692 |
| Sample Date | | Client Info | | **15 May 2024** | 08 Feb 2023 | 29 Sep 2022 |
| Machine Age | hrs | Client Info | | **3574** | 2089 | 1519 |
| Oil Age | hrs | Client Info | | **0** | 500 | 500 |
| Oil Changed | | Client Info | | **N/A** | Changed | Changed |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >5 | **<1.0** | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | **NEG** | NEG | NEG |
| Glycol | | WC Method | | **NEG** | NEG | NEG |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >100 | **11** | 9 | 8 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | **3** | 4 | 4 |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **3** | 4 | 3 |
| Lead | ppm | ASTM D5185m | >40 | **1** | <1 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **11** | 13 | 46 |
| Tin | ppm | ASTM D5185m | >15 | **<1** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 151 | **295** | 380 | 283 |
| Barium | ppm | ASTM D5185m | 0.4 | **<1** | <1 | 0 |
| Molybdenum | ppm | ASTM D5185m | 250 | **95** | 100 | 96 |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 0 | **426** | 425 | 515 |
| Calcium | ppm | ASTM D5185m | 2046 | **1481** | 1495 | 1541 |
| Phosphorus | ppm | ASTM D5185m | 1043 | **1174** | 983 | 912 |
| Zinc | ppm | ASTM D5185m | 943 | **1320** | 1184 | 1155 |
| Sulfur | ppm | ASTM D5185m | 5012 | **3593** | 3445 | 3666 |

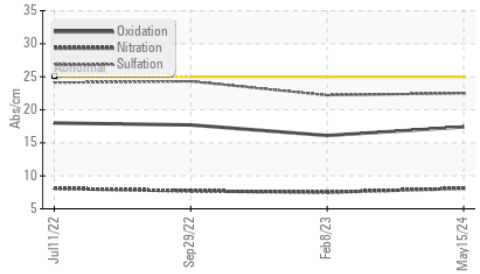
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **11** | 16 | 8 |
| Sodium | ppm | ASTM D5185m | | **1** | 0 | 0 |
| Potassium | ppm | ASTM D5185m | >20 | **10** | 2 | 3 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.2** | 0.1 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **8.1** | 7.5 | 7.7 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **22.5** | 22.2 | 24.3 |

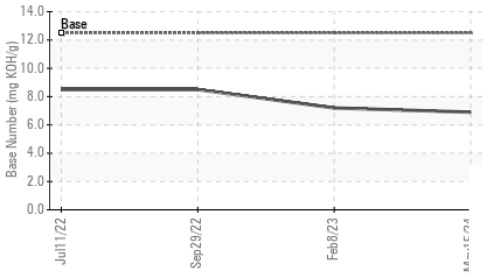
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **17.4** | 16.1 | 17.7 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 12.5 | **6.9** | 7.2 | 8.5 |

# OIL ANALYSIS REPORT

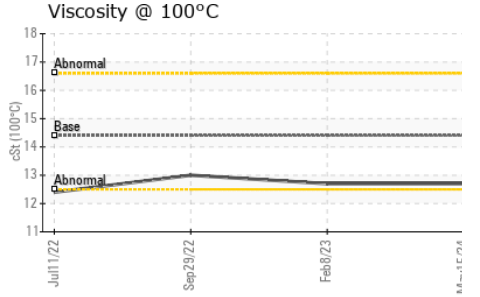
FT-IR (Direct Trend)




Base Number




Viscosity @ 100°C

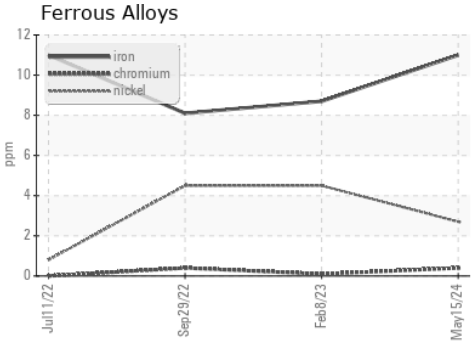



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| 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 |
| Free Water | scalar | *Visual | | **NEG** | NEG | NEG |

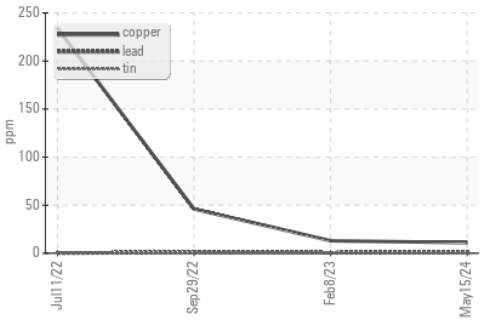
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 14.4 | **12.7** | 12.7 | 13.0 |

## GRAPHS

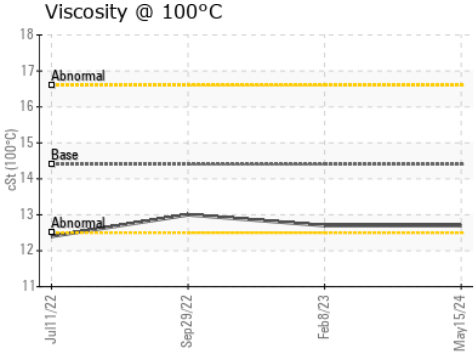
Ferrous Alloys



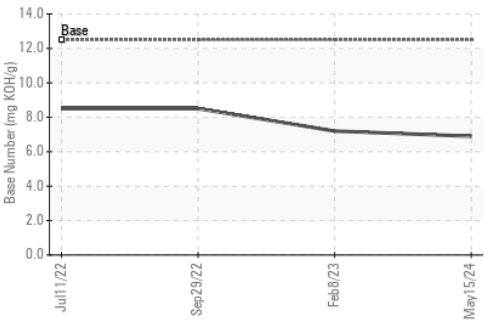

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : ML0001478
**Lab Number** : 06196331
**Unique Number** : 11058454
**Test Package** : CONST ( Additional Tests: TBN )

**Received** : 31 May 2024
**Tested** : 03 Jun 2024
**Diagnosed** : 03 Jun 2024 - Don Baldridge

*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)*


**MCCLUNG-LOGAN EQUIPMENT CO - BRIDGEVILLE**
17941 SUSSEX HIGHWAY
BRIDGEVILLE, DE
US 19933
Contact: MATT CLARK
MCLARK@mcclung-logan.com
T: (302)337-3400
F: (302)337-9083