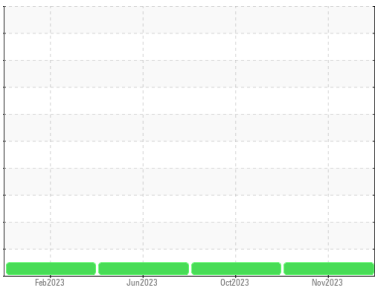
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
**912070**
Component
**Diesel Engine**
Fluid
**DIESEL ENGINE OIL SAE 40 (--- GAL)**

## DIAGNOSIS

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

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

**Contamination**
Elevated aluminum (Al) and/or lead (Pb) and potassium (K) levels in your metals analysis are likely a result of solder flux release into the lubricant and is common on new equipment/components. 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 | | **GFL0098246** | GFL0083906 | GFL0061510 |
| Sample Date | | Client Info | | **16 Nov 2023** | 03 Oct 2023 | 05 Jun 2023 |
| Machine Age | hrs | Client Info | | **2476** | 2140 | 0 |
| Oil Age | hrs | Client Info | | **2476** | 2140 | 0 |
| Oil Changed | | Client Info | | **N/A** | N/A | N/A |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

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

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >110 | **37** | 27 | 30 |
| Chromium | ppm | ASTM D5185m | >4 | **<1** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | **0** | <1 | 0 |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Silver | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >25 | **11** | 8 | 9 |
| Lead | ppm | ASTM D5185m | >45 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >85 | **5** | 4 | 4 |
| Tin | ppm | ASTM D5185m | >4 | **0** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **<1** | <1 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 250 | **2** | 1 | 3 |
| Barium | ppm | ASTM D5185m | 10 | **<1** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 100 | **59** | 61 | 62 |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 450 | **927** | 1014 | 970 |
| Calcium | ppm | ASTM D5185m | 3000 | **1052** | 1142 | 1215 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **919** | 1010 | 978 |
| Zinc | ppm | ASTM D5185m | 1350 | **1210** | 1293 | 1287 |
| Sulfur | ppm | ASTM D5185m | 4250 | **2450** | 2569 | 3161 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >30 | **9** | 9 | 6 |
| Sodium | ppm | ASTM D5185m | >216 | **<1** | 2 | 1 |
| Potassium | ppm | ASTM D5185m | >20 | **13** | 12 | 11 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.6** | 0.4 | 0.4 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **10.3** | 9.3 | 9.9 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **23.6** | 22.3 | 21.1 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **21.2** | 19.4 | 16.9 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 8.5 | **4.4** | 5.0 | 6.7 |

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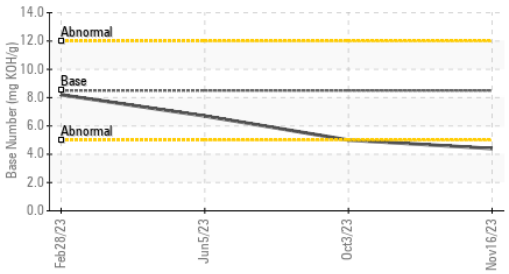
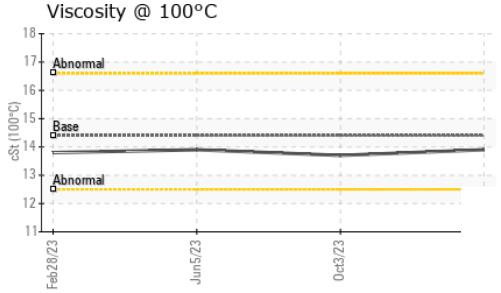
Base Number




Viscosity @ 100°C

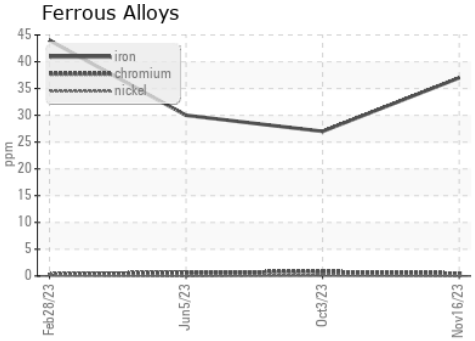



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

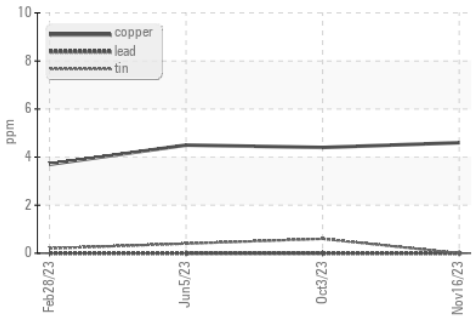
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 14.4 | **13.9** | 13.7 | 13.9 |

## GRAPHS

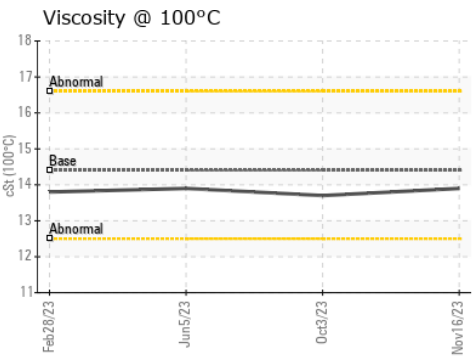
Ferrous Alloys



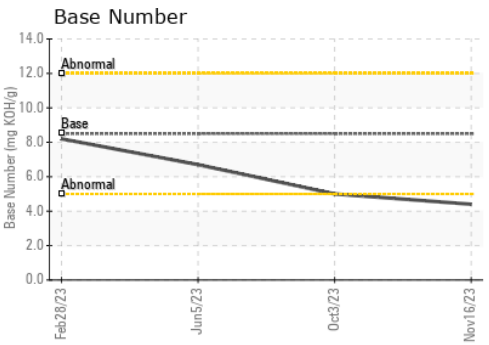

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0098246
**Lab Number** : 06011218
**Unique Number** : 10750362
**Test Package** : FLEET

**Received** : 17 Nov 2023
**Diagnosed** : 19 Nov 2023
**Diagnostician** : Wes Davis

*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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