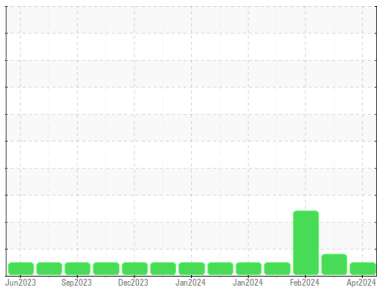
# OIL ANALYSIS REPORT

Area
**(413UA)**
Machine Id
**813012**
Component
**Diesel Engine**
Fluid
**DIESEL ENGINE OIL SAE 40 (--- GAL)**

Sample Rating Trend




**NORMAL**

## 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**
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 | | **GFL0116557** | GFL0111886 | GFL0108253 |
| Sample Date | | Client Info | | **02 Apr 2024** | 12 Mar 2024 | 09 Feb 2024 |
| Machine Age | hrs | Client Info | | **3780** | 3636 | 3469 |
| Oil Age | hrs | Client Info | | **144** | 3636 | 3469 |
| Oil Changed | | Client Info | | **Not Changd** | Changed | Not Changd |
| Sample Status | | | | **NORMAL** | ABNORMAL | ABNORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >3.0 | **<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 | >120 | **4** | 14 | 63 |
| Chromium | ppm | ASTM D5185m | >20 | **0** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >5 | **4** | 10 | 2 |
| Titanium | ppm | ASTM D5185m | >2 | **<1** | 0 | <1 |
| Silver | ppm | ASTM D5185m | >2 | **0** | <1 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | **<1** | 2 | 3 |
| Lead | ppm | ASTM D5185m | >40 | **0** | <1 | 2 |
| Copper | ppm | ASTM D5185m | >330 | **<1** | 6 | 28 |
| Tin | ppm | ASTM D5185m | >15 | **0** | <1 | 2 |
| Vanadium | ppm | ASTM D5185m | | **<1** | 0 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | <1 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 250 | **17** | 9 | 38 |
| Barium | ppm | ASTM D5185m | 10 | **0** | 0 | 18 |
| Molybdenum | ppm | ASTM D5185m | 100 | **58** | 56 | 70 |
| Manganese | ppm | ASTM D5185m | | **<1** | 1 | 24 |
| Magnesium | ppm | ASTM D5185m | 450 | **966** | 888 | 1022 |
| Calcium | ppm | ASTM D5185m | 3000 | **1186** | 1071 | 1561 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **961** | 1005 | 1056 |
| Zinc | ppm | ASTM D5185m | 1350 | **1283** | 1197 | 1170 |
| Sulfur | ppm | ASTM D5185m | 4250 | **3860** | 3197 | 3859 |

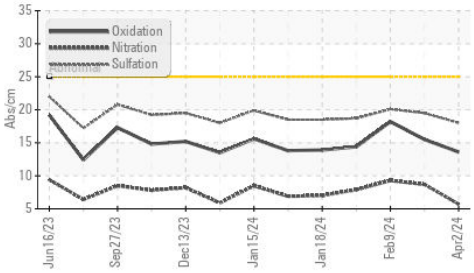
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **2** | 4 | 47 |
| Sodium | ppm | ASTM D5185m | >216 | **<1** | 1 | 6 |
| Potassium | ppm | ASTM D5185m | >20 | **<1** | 3 | 4 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >4 | **0.2** | 0.5 | 0 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **5.7** | 8.7 | 9.3 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **18.0** | 19.5 | 20.1 |

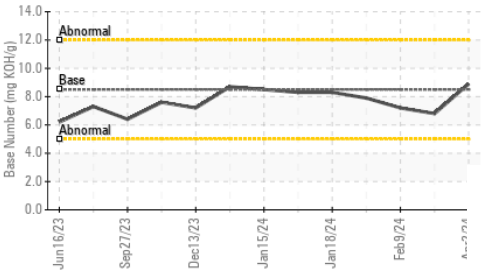
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **13.6** | 15.5 | 18.2 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 8.5 | **8.9** | 6.8 | 7.2 |

# OIL ANALYSIS REPORT

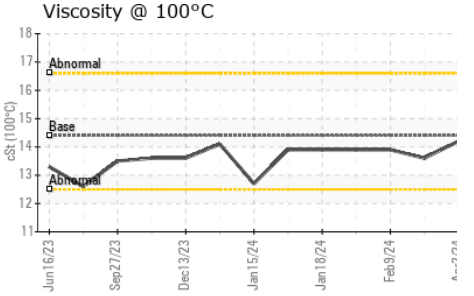
FT-IR (Direct Trend)




Base Number




Viscosity @ 100°C

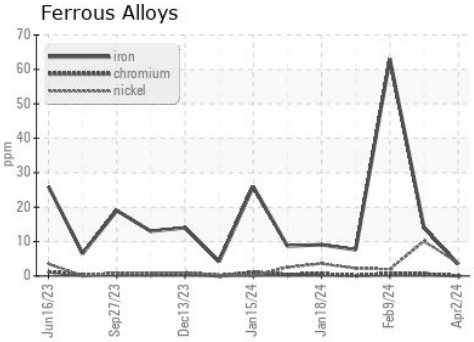



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

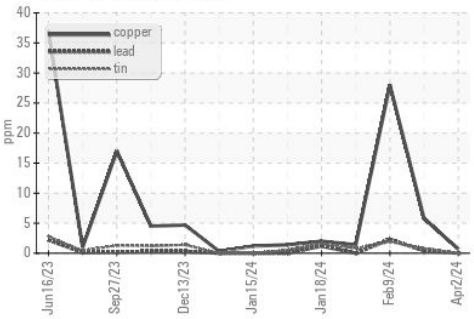
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 14.4 | **14.2** | 13.6 | 13.9 |

## GRAPHS

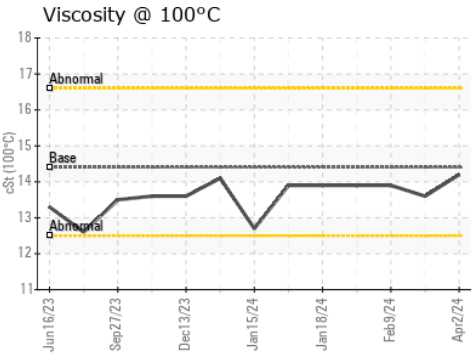
Ferrous Alloys



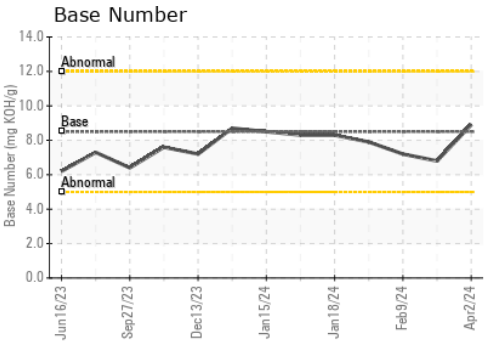

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0116557
**Lab Number** : 06138421
**Unique Number** : 10963229
**Test Package** : FLEET

**Received** : 04 Apr 2024
**Tested** : 05 Apr 2024
**Diagnosed** : 05 Apr 2024 - Wes Davis

**GFL Environmental - 652 - Fredericksburg Hauling**
10954 Houser Drive
Fredericksburg, VA
US 22408
Contact: TECHNICIAN ACCOUNT
catherine.anastasio@wearcheck.com
T:
F:

*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)*

Report Id: GFL652 [WUSCAR] 06138421 (Generated: 04/05/2024 06:16:18) Rev: 1

Submitted By: TECHNICIAN ACCOUNT