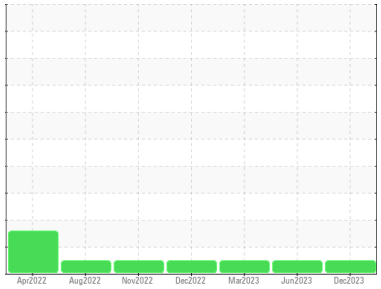
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
**912043**
Component
**Diesel Engine**
Fluid
**DIESEL ENGINE OIL SAE 40 (32 QTS)**

## DIAGNOSIS

**Recommendation**
The oil change at the time of sampling has been noted. Resample at the next service interval to monitor. No other corrective action is recommended at this time. 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**
Light fuel dilution occurring. No other contaminants were detected 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 | | **GFL0073345** | GFL0071550 | GFL0053149 |
| Sample Date | | Client Info | | **22 Dec 2023** | 07 Jun 2023 | 13 Mar 2023 |
| Machine Age | hrs | Client Info | | **600** | 0 | 0 |
| Oil Age | hrs | Client Info | | **600** | 600 | 600 |
| Oil Changed | | Client Info | | **Changed** | Changed | Changed |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| 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 | **44** | 23 | 15 |
| Chromium | ppm | ASTM D5185m | >20 | **1** | 1 | <1 |
| Nickel | ppm | ASTM D5185m | >5 | **0** | 4 | 3 |
| Titanium | ppm | ASTM D5185m | >2 | **9** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >2 | **<1** | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **3** | 3 | 2 |
| Lead | ppm | ASTM D5185m | >40 | **0** | <1 | 0 |
| Copper | ppm | ASTM D5185m | >330 | **127** | 3 | 4 |
| Tin | ppm | ASTM D5185m | >15 | **2** | 2 | <1 |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 250 | **10** | 3 | 7 |
| Barium | ppm | ASTM D5185m | 10 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 100 | **79** | 64 | 56 |
| Manganese | ppm | ASTM D5185m | | **3** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 450 | **835** | 1005 | 777 |
| Calcium | ppm | ASTM D5185m | 3000 | **1163** | 1116 | 1049 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **926** | 1047 | 855 |
| Zinc | ppm | ASTM D5185m | 1350 | **1226** | 1374 | 1040 |
| Sulfur | ppm | ASTM D5185m | 4250 | **2726** | 3227 | 2840 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **20** | 5 | 4 |
| Sodium | ppm | ASTM D5185m | >216 | **1** | 3 | 4 |
| Potassium | ppm | ASTM D5185m | >20 | **<1** | 8 | 4 |
| Fuel | % | ASTM D3524 | >3.0 | **1.0** | <1.0 | <1.0 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >4 | **0.7** | 0.7 | 0.6 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **9.7** | 9.8 | 9.3 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **19.8** | 22.7 | 20.5 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **15.1** | 19.2 | 16.0 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 8.5 | **6.2** | 5.4 | 5.8 |

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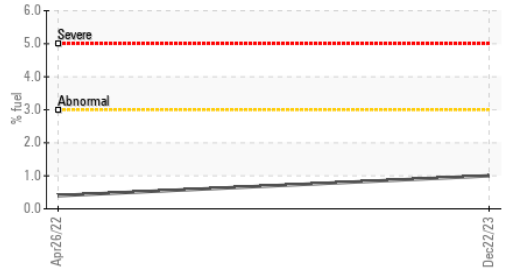
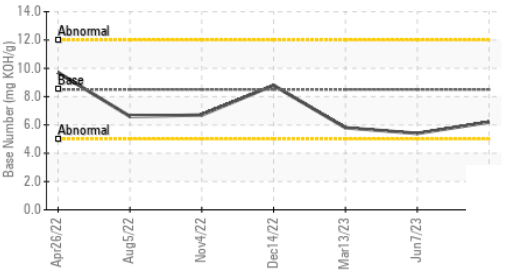
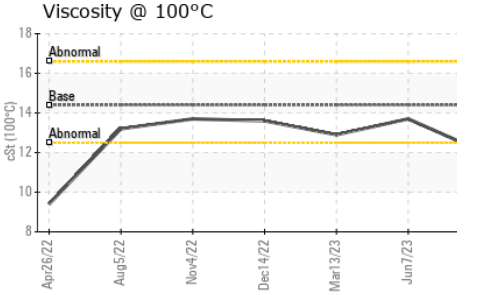
Fuel Dilution




Base Number




Viscosity @ 100°C

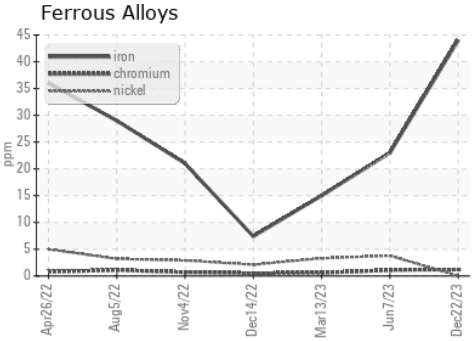



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

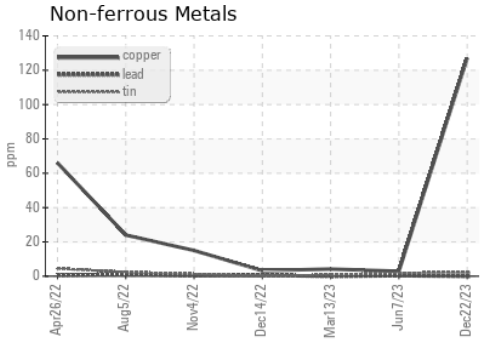
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 14.4 | **12.1** | 13.7 | 12.9 |

## GRAPHS

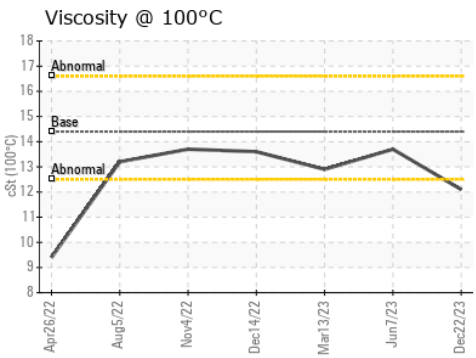
Ferrous Alloys



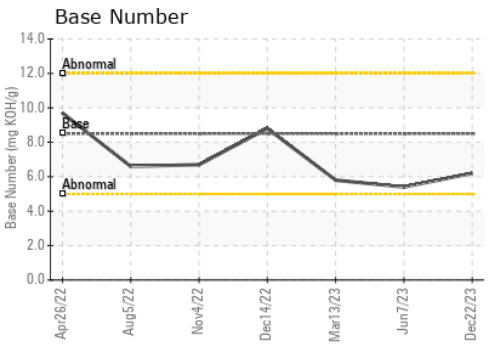

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : GFL0073345 **Recieved** : 28 Dec 2023
**Lab Number** : 06046804 **Diagnosed** : 02 Jan 2024
**Unique Number** : 10807412 **Diagnostician** : Wes Davis
**Test Package** : FLEET ( Additional Tests: FuelDilution, PercentFuel )

*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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