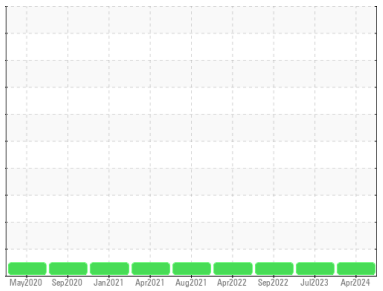
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
## FREIGHTLINER 222
Component
**Diesel Engine**
Fluid
**DIESEL ENGINE OIL SAE 15W40 (--- QTS)**

## DIAGNOSIS

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

**Wear**
Metal levels are typical for a new component breaking in.

**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 | | **RW0004834** | RW0004293 | RW0003900 |
| Sample Date | | Client Info | | **03 Apr 2024** | 17 Jul 2023 | 19 Sep 2022 |
| Machine Age | mls | Client Info | | **10852** | 9314 | 6843 |
| Oil Age | mls | Client Info | | **0** | 2453 | 57 |
| Oil Changed | | Client Info | | **Changed** | Changed | Changed |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

| 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 | >90 | **4** | 8 | 3 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | <1 | 0 |
| Nickel | ppm | ASTM D5185m | >2 | **<1** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | **<1** | <1 | 0 |
| Silver | ppm | ASTM D5185m | >2 | **0** | <1 | <1 |
| Aluminum | ppm | ASTM D5185m | >20 | **4** | 1 | 1 |
| Lead | ppm | ASTM D5185m | >40 | **<1** | <1 | <1 |
| Copper | ppm | ASTM D5185m | >330 | **2** | 2 | <1 |
| Tin | ppm | ASTM D5185m | >15 | **<1** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **<1** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **<1** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 250 | **4** | 7 | 8 |
| Barium | ppm | ASTM D5185m | 10 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 100 | **64** | 66 | 56 |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 450 | **979** | 939 | 904 |
| Calcium | ppm | ASTM D5185m | 3000 | **1168** | 1100 | 1070 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1097** | 991 | 1003 |
| Zinc | ppm | ASTM D5185m | 1350 | **1270** | 1220 | 1192 |
| Sulfur | ppm | ASTM D5185m | 4250 | **3537** | 3640 | 3614 |

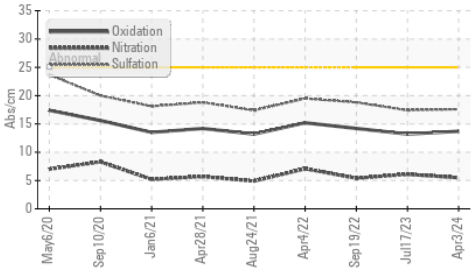
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **4** | 4 | 3 |
| Sodium | ppm | ASTM D5185m | >158 | **1** | 3 | 1 |
| Potassium | ppm | ASTM D5185m | >20 | **8** | 2 | 0 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >6 | **0.1** | 0.2 | 0.1 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **5.5** | 6.1 | 5.4 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **17.6** | 17.4 | 18.8 |

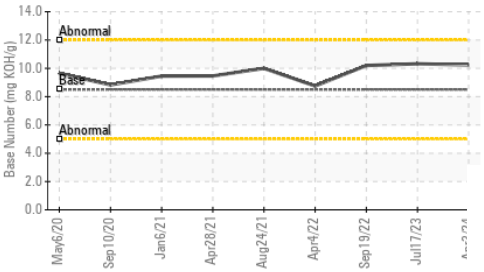
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **13.7** | 13.2 | 14.2 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 8.5 | **10.24** | 10.32 | 10.2 |

# OIL ANALYSIS REPORT

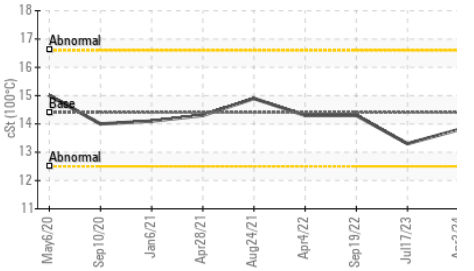
FT-IR (Direct Trend)




Base Number




Viscosity @ 100°C

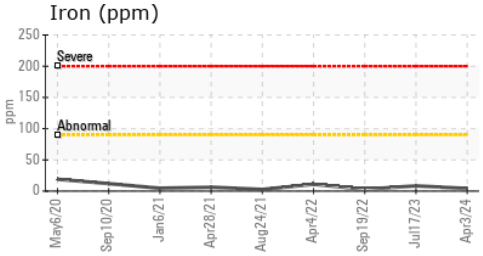



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **LIGHT** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

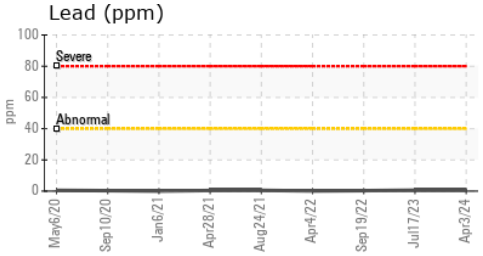
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 14.4 | **13.8** | 13.3 | 14.3 |

## GRAPHS

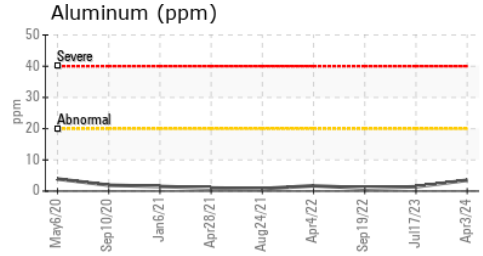
Iron (ppm)



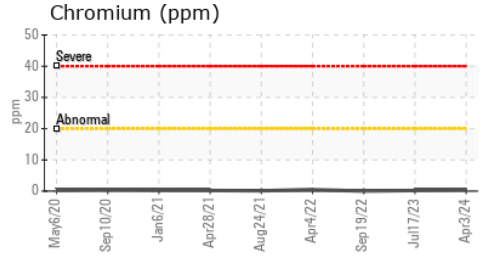

Lead (ppm)



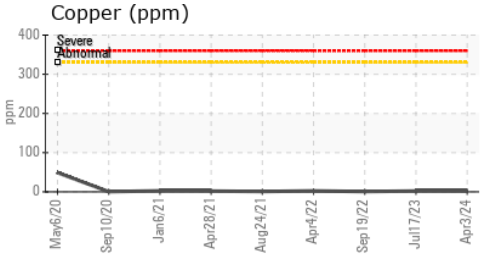

Aluminum (ppm)



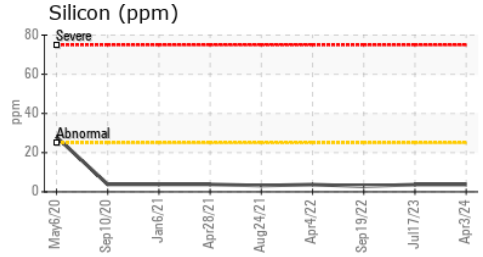

Chromium (ppm)



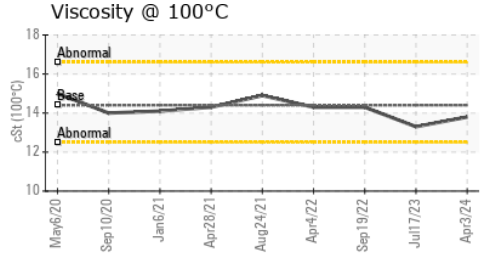

Copper (ppm)



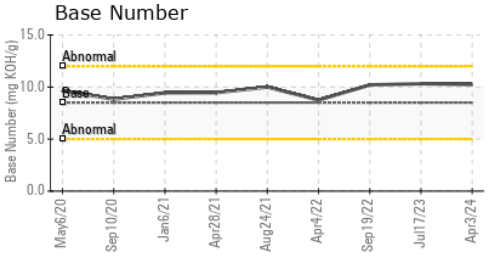

Silicon (ppm)




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : RW0004834
**Lab Number** : 06148153
**Unique Number** : 10978231
**Test Package** : MOB 2

**Received** : 12 Apr 2024
**Tested** : 15 Apr 2024
**Diagnosed** : 15 Apr 2024 - 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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Report Id: CITFARMI [WUSCAR] 06148153 (Generated: 04/15/2024 18:50:01) Rev: 1

Contact/Location: JERRY BROCK - CITFARMI