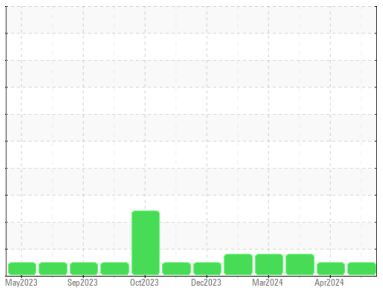
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Area
**BD SHOP**
Machine Id
**300215**
Component
**Diesel Engine**
Fluid
**TEST OIL GOLD 4 (40 LTR)**

## DIAGNOSIS

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

**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 | | **WC0926284** | WC0926315 | WC0926314 |
| Sample Date | | Client Info | | **12 Jun 2024** | 11 Apr 2024 | 11 Apr 2024 |
| Machine Age | kms | Client Info | | **265250** | 241126 | 241125 |
| Oil Age | kms | Client Info | | **24124** | 1 | 60130 |
| Oil Changed | | Client Info | | **Not Changd** | Changed | Not Changd |
| Sample Status | | | | **NORMAL** | NORMAL | ABNORMAL |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >5 | **<1.0** | <1.0 | 0.2 |
| Water | | WC Method | >0.2 | **NEG** | NEG | NEG |
| Glycol | | WC Method | | **NEG** | NEG | 0.0 |

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185(m) | >100 | **19** | 3 | 43 |
| Chromium | ppm | ASTM D5185(m) | >20 | **1** | 0 | 3 |
| Nickel | ppm | ASTM D5185(m) | >4 | **0** | <1 | <1 |
| Titanium | ppm | ASTM D5185(m) | | **<1** | 0 | <1 |
| Silver | ppm | ASTM D5185(m) | >3 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185(m) | >20 | **15** | 3 | ▲ 40 |
| Lead | ppm | ASTM D5185(m) | >40 | **1** | 0 | 0 |
| Copper | ppm | ASTM D5185(m) | >330 | **2** | <1 | 3 |
| Tin | ppm | ASTM D5185(m) | >15 | **0** | 0 | 0 |
| Antimony | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Vanadium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Beryllium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185(m) | | **0** | 0 | 0 |

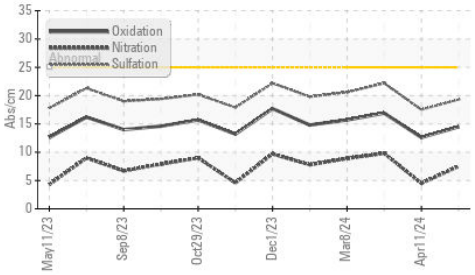
| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185(m) | 1 | **3** | <1 | 2 |
| Barium | ppm | ASTM D5185(m) | 0 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185(m) | 60 | **59** | 56 | 61 |
| Manganese | ppm | ASTM D5185(m) | 0 | **<1** | 0 | <1 |
| Magnesium | ppm | ASTM D5185(m) | 950 | **976** | 937 | 997 |
| Calcium | ppm | ASTM D5185(m) | 980 | **1059** | 998 | 1079 |
| Phosphorus | ppm | ASTM D5185(m) | 1100 | **957** | 958 | 981 |
| Zinc | ppm | ASTM D5185(m) | 1150 | **1121** | 1113 | 1198 |
| Sulfur | ppm | ASTM D5185(m) | 2600 | **2434** | 2463 | 2315 |
| Lithium | ppm | ASTM D5185(m) | | **<1** | <1 | <1 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185(m) | >25 | **7** | 2 | 5 |
| Sodium | ppm | ASTM D5185(m) | | **8** | 1 | 2 |
| Potassium | ppm | ASTM D5185(m) | >20 | **27** | <1 | 8 |

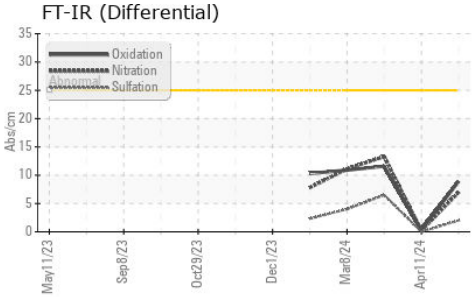
| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | ASTM D7844* | >3 | **0.5** | 0 | 1.2 |
| Nitration | Abs/cm | ASTM D7624* | >20 | **7.5** | 4.5 | 9.8 |
| Nitration(Diff) | Abs/cm | ASTM E2412* | < 25 | **7** | 0.2 | 13.3 |
| Sulfation | Abs/.1mm | ASTM D7415* | >30 | **19.3** | 17.5 | 22.2 |
| Sulfation(Diff) | Abs/cm | ASTM E2412* | | **2** | 0 | 6.5 |

# OIL ANALYSIS REPORT

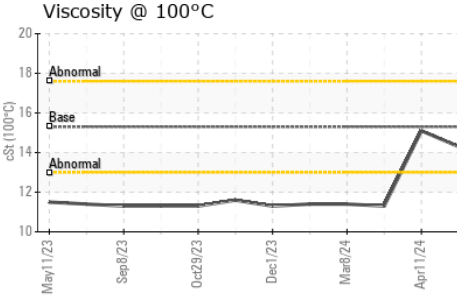
FT-IR (Direct Trend)



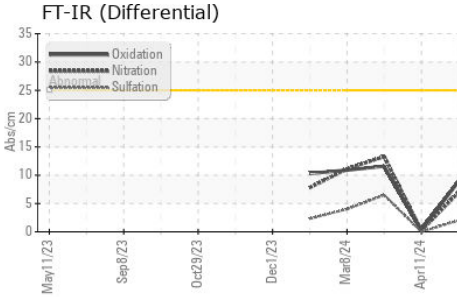

FT-IR (Differential)




Viscosity @ 100°C




FT-IR (Differential)



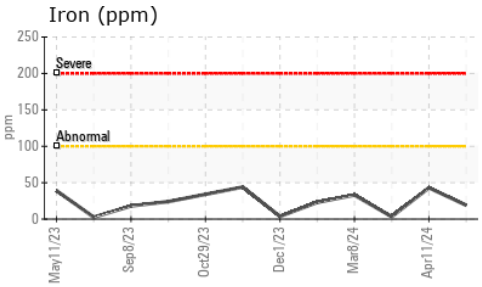

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | ASTM D7414* | >25 | **14.5** | 12.6 | 16.9 |
| Oxidation(Diff) | Abs/cm | ASTM E2412* | < 25 | **8.9** | 0.3 | 11.6 |
| Base Number (BN) | mg KOH/g | ASTM D2896* | 9.5 | **9.18** | 9.84 | 7.57 |

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Emulsified Water | scalar | Visual* | >0.2 | **NEG** | NEG | NEG |
| Free Water | scalar | Visual* | | **NEG** | NEG | NEG |

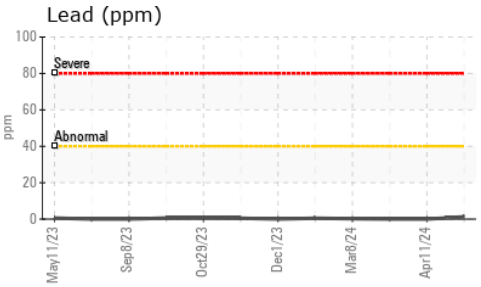
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D7279(m) | 15.3 | **14.3** | 15.1 | 11.3 |

GRAPHS

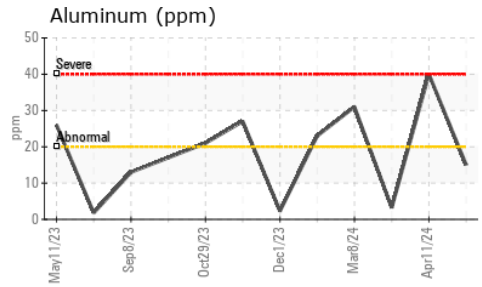
Iron (ppm)



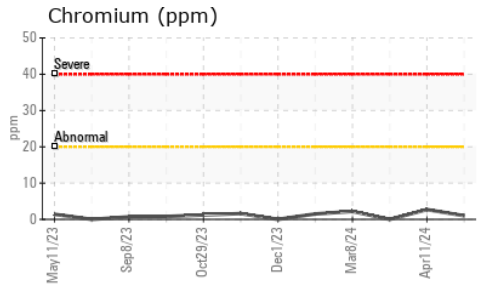

Lead (ppm)



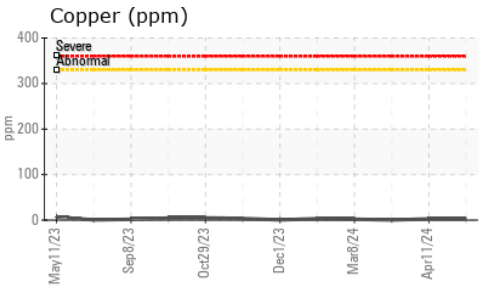

Aluminum (ppm)



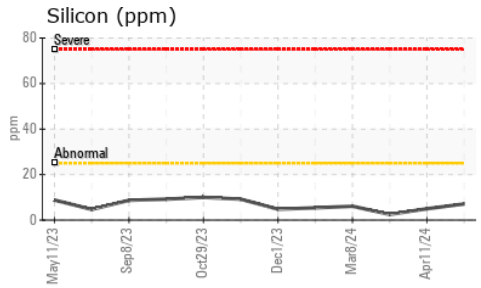

Chromium (ppm)



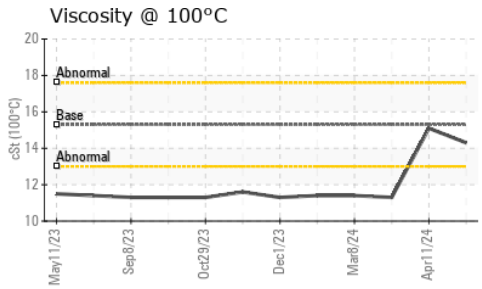

Copper (ppm)



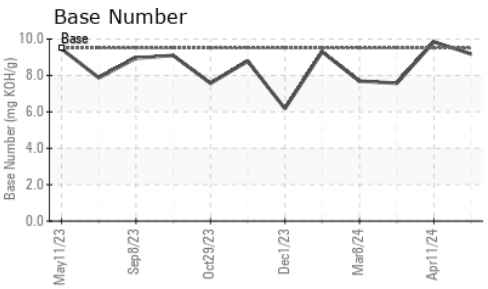

Silicon (ppm)




Viscosity @ 100°C




Base Number




ISO 17025:2017 Accredited Laboratory

**Laboratory** : WearCheck - C8-1175 Appleby Line, Burlington, ON L7L 5H9
**Sample No.** : WC0926284 **Received** : 13 Jun 2024
**Lab Number** : 02641593 **Tested** : 14 Jun 2024
**Unique Number** : 5799132 **Diagnosed** : 14 Jun 2024 - Kevin Marson
**Test Package** : MOB 2 ( Additional Tests: FT-IR(Diff) )

*To discuss this sample report, contact Customer Service at 1-800-268-2131.*
*Test denoted (*) outside scope of accreditation, (m) method modified, (e) tested at external lab.*
*Validity of results and interpretation are based on the sample and information as supplied.*

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