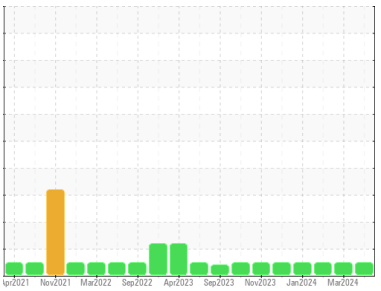
# OIL ANALYSIS REPORT

Sample Rating Trend




**NORMAL**

Machine Id
**3111**
Component
**Diesel Engine**
Fluid
**DIESEL ENGINE OIL SAE 10W30 (--- QTS)**

## DIAGNOSIS

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

**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 | | **WC0906860** | WC0863293 | WC0906925 |
| Sample Date | | Client Info | | **07 Jun 2024** | 22 Mar 2024 | 22 Feb 2024 |
| Machine Age | mls | Client Info | | **468398** | 441359 | 429561 |
| Oil Age | mls | Client Info | | **39948** | 428450 | 390440 |
| Oil Changed | | Client Info | | **Changed** | Not Changd | 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 | >100 | **19** | 5 | 7 |
| Chromium | ppm | ASTM D5185m | >20 | **<1** | <1 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | **0** | <1 | <1 |
| Titanium | ppm | ASTM D5185m | | **<1** | <1 | 0 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | **7** | 4 | 5 |
| Lead | ppm | ASTM D5185m | >40 | **0** | <1 | 0 |
| Copper | ppm | ASTM D5185m | >330 | **2** | 2 | 4 |
| Tin | ppm | ASTM D5185m | >15 | **0** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **<1** | <1 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | <1 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 250 | **19** | 66 | 35 |
| Barium | ppm | ASTM D5185m | 10 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 100 | **5** | 3 | 4 |
| Manganese | ppm | ASTM D5185m | | **<1** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 450 | **825** | 736 | 737 |
| Calcium | ppm | ASTM D5185m | 3000 | **1566** | 1370 | 1320 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **799** | 724 | 744 |
| Zinc | ppm | ASTM D5185m | 1350 | **934** | 829 | 834 |
| Sulfur | ppm | ASTM D5185m | 4250 | **3644** | 2954 | 2965 |

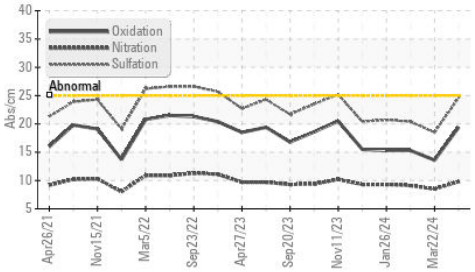
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >25 | **9** | 6 | 6 |
| Sodium | ppm | ASTM D5185m | | **23** | 6 | 13 |
| Potassium | ppm | ASTM D5185m | >20 | **7** | 6 | 7 |
| Fuel | % | ASTM D3524 | >5 | **<1.0** | <1.0 | <1.0 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.5** | 0.2 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **9.8** | 8.5 | 9.1 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **24.6** | 18.5 | 20.4 |

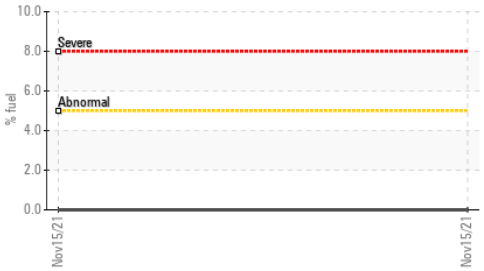
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **19.4** | 13.6 | 15.3 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 8.5 | **5.5** | 7.4 | 6.7 |

# OIL ANALYSIS REPORT

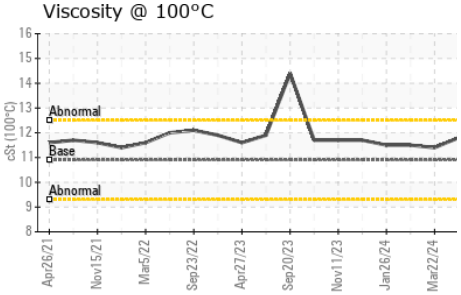
FT-IR (Direct Trend)



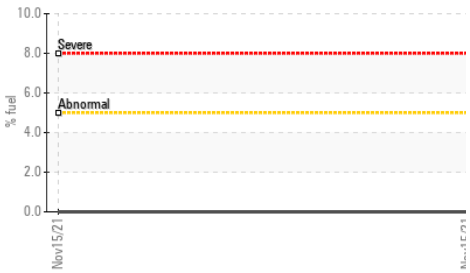

Fuel Dilution




Viscosity @ 100°C




Fuel Dilution

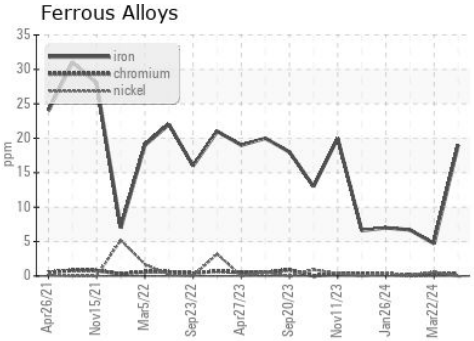



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

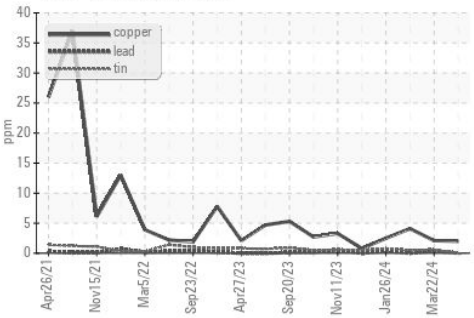
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 10.9 | **11.8** | 11.4 | 11.5 |

## GRAPHS

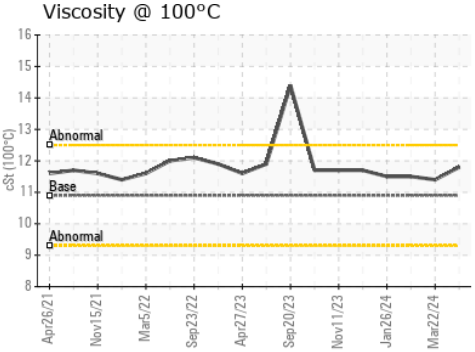
Ferrous Alloys



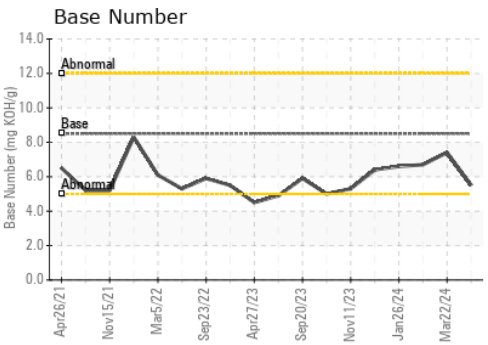

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0906860 **Received** : 24 Jun 2024
**Lab Number** : 06219109 **Tested** : 26 Jun 2024
**Unique Number** : 11097306 **Diagnosed** : 26 Jun 2024 - Jonathan Hester
**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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