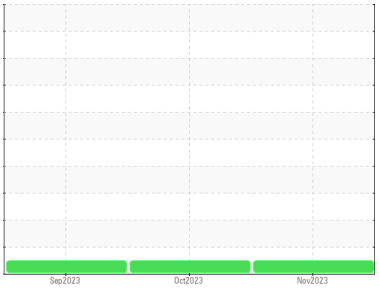
# OIL ANALYSIS REPORT

Sample Rating Trend




**NORMAL**

Area
**Bernardsville**
Machine Id
**FREIGHTLINER 2494**
Component
**Diesel Engine**
Fluid
**GIBRALTAR 15W/40 SUPER S-3 LX (11)**

## 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 | | **WC0864840** | WC0864901 | WC0830891 |
| Sample Date | | Client Info | | **07 Nov 2023** | 06 Oct 2023 | 13 Sep 2023 |
| Machine Age | hrs | Client Info | | **9834** | 9616 | 9426 |
| Oil Age | hrs | Client Info | | **9834** | 0 | 450 |
| Oil Changed | | Client Info | | **Changed** | Not Changd | Changed |
| Sample Status | | | | **NORMAL** | NORMAL | NORMAL |

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

| WEAR METALS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Iron | ppm | ASTM D5185m | >80 | **10** | 9 | 29 |
| Chromium | ppm | ASTM D5185m | >5 | **<1** | <1 | 2 |
| Nickel | ppm | ASTM D5185m | >2 | **0** | 0 | <1 |
| Titanium | ppm | ASTM D5185m | | **0** | <1 | <1 |
| Silver | ppm | ASTM D5185m | >3 | **<1** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >30 | **2** | 3 | 6 |
| Lead | ppm | ASTM D5185m | >30 | **0** | <1 | <1 |
| Copper | ppm | ASTM D5185m | >150 | **4** | 2 | 5 |
| Tin | ppm | ASTM D5185m | >5 | **0** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **0** | <1 | <1 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | <1 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | | **30** | 33 | 11 |
| Barium | ppm | ASTM D5185m | | **6** | 12 | 0 |
| Molybdenum | ppm | ASTM D5185m | 66 | **74** | 68 | 58 |
| Manganese | ppm | ASTM D5185m | | **0** | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 1000 | **497** | 533 | 768 |
| Calcium | ppm | ASTM D5185m | 1050 | **1573** | 1524 | 1111 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **955** | 955 | 928 |
| Zinc | ppm | ASTM D5185m | 1270 | **1149** | 1182 | 1232 |
| Sulfur | ppm | ASTM D5185m | | **3685** | 3203 | 3679 |

| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >20 | **5** | 5 | 10 |
| Sodium | ppm | ASTM D5185m | | **0** | 1 | 8 |
| Potassium | ppm | ASTM D5185m | >20 | **4** | 5 | 10 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.5** | 0.3 | 0.8 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **7.9** | 7.0 | 11.5 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **19.4** | 18.0 | 17.3 |

| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **14.3** | 12.9 | 16.8 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 10.1 | **7.3** | 7.1 | 11.6 |

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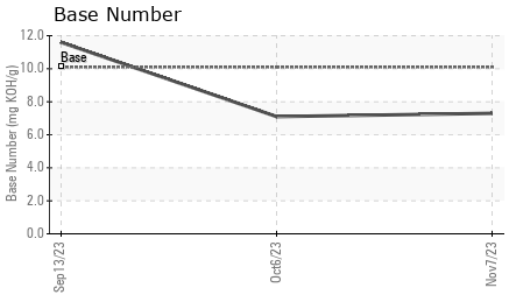
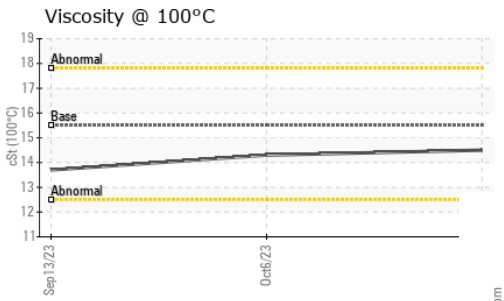
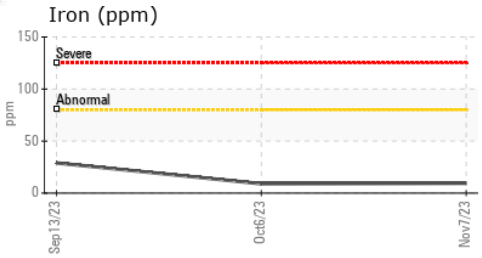


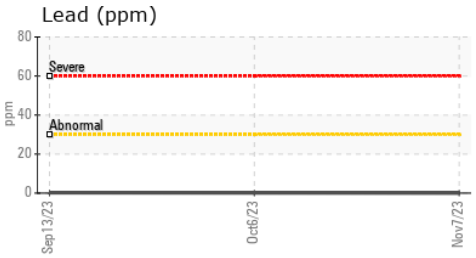



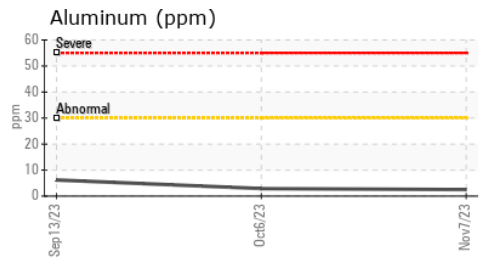

| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

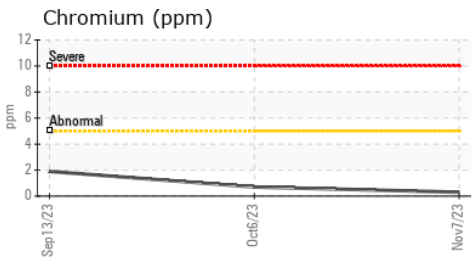
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 15.5 | **14.5** | 14.3 | 13.7 |

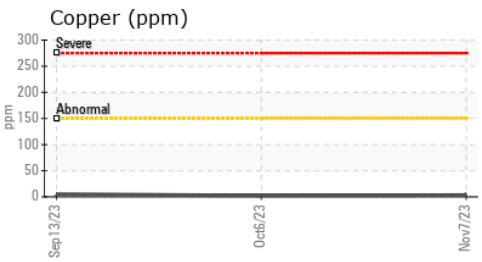
## GRAPHS

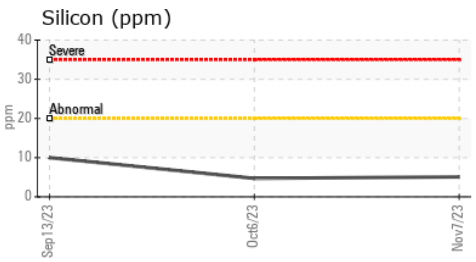


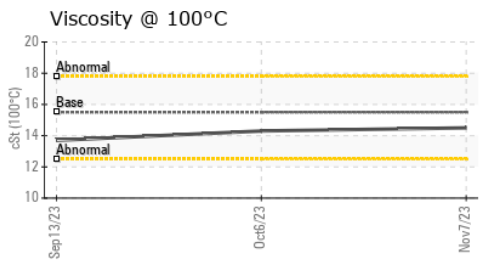



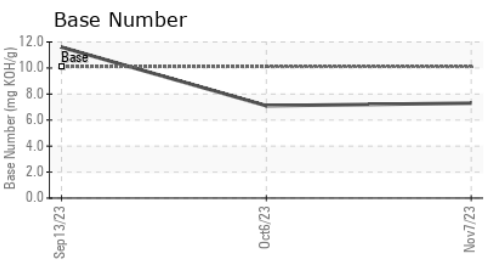




**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : WC0864840 **Received** : 14 Nov 2023
**Lab Number** : 06006738 **Diagnosed** : 16 Nov 2023
**Unique Number** : 10740500 **Diagnostician** : Sean Felton
**Test Package** : MOB 1 ( Additional Tests: TBN )

Certificate L2367

*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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