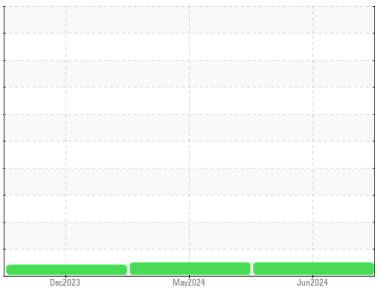
# OIL ANALYSIS REPORT

Sample Rating Trend




NORMAL

Machine Id
## 95072 FREIGHTLINER
Component
**1 Diesel Engine**
Fluid
**DIESEL ENGINE OIL SAE 10W30 (--- GAL)**

## DIAGNOSIS

**Recommendation**
Resample at the next service interval to monitor. 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**
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 | | **SBP0007215** | SBP0007217 | SBP0006016 |
| Sample Date | | Client Info | | **12 Jun 2024** | 28 May 2024 | 07 Dec 2023 |
| Machine Age | mls | Client Info | | **61022** | 60865 | 49042 |
| Oil Age | mls | Client Info | | **49042** | 11823 | 49042 |
| Oil Changed | | Client Info | | **Changed** | Changed | Changed |
| Sample Status | | | | **NORMAL** | NORMAL | ATTENTION |

| CONTAMINATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Fuel | | WC Method | >5 | **<1.0** | <1.0 | 0.4 |
| 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 | >80 | **11** | 64 | 23 |
| Chromium | ppm | ASTM D5185m | >5 | **0** | 1 | <1 |
| Nickel | ppm | ASTM D5185m | >2 | **0** | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Silver | ppm | ASTM D5185m | >3 | **0** | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >30 | **3** | 16 | 5 |
| Lead | ppm | ASTM D5185m | >30 | **0** | 0 | 0 |
| Copper | ppm | ASTM D5185m | >150 | **<1** | 3 | 2 |
| Tin | ppm | ASTM D5185m | >5 | **0** | <1 | <1 |
| Vanadium | ppm | ASTM D5185m | | **0** | 0 | 0 |
| Cadmium | ppm | ASTM D5185m | | **0** | 0 | 0 |

| ADDITIVES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Boron | ppm | ASTM D5185m | 250 | **159** | 2 | 1 |
| Barium | ppm | ASTM D5185m | 10 | **0** | 0 | 0 |
| Molybdenum | ppm | ASTM D5185m | 100 | **9** | 64 | 56 |
| Manganese | ppm | ASTM D5185m | | **<1** | 1 | <1 |
| Magnesium | ppm | ASTM D5185m | 450 | **174** | 1055 | 929 |
| Calcium | ppm | ASTM D5185m | 3000 | **1979** | 1154 | 1004 |
| Phosphorus | ppm | ASTM D5185m | 1150 | **1027** | 1150 | 947 |
| Zinc | ppm | ASTM D5185m | 1350 | **1188** | 1369 | 1243 |
| Sulfur | ppm | ASTM D5185m | 4250 | **4047** | 3804 | 2842 |

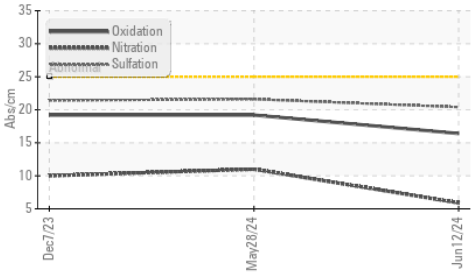
| CONTAMINANTS | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Silicon | ppm | ASTM D5185m | >20 | **5** | 5 | 3 |
| Sodium | ppm | ASTM D5185m | | **<1** | 2 | <1 |
| Potassium | ppm | ASTM D5185m | >20 | **10** | 17 | 5 |

| INFRA-RED | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Soot % | % | *ASTM D7844 | >3 | **0.1** | 0.6 | 0.5 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | **5.9** | 11.0 | 10.0 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | **20.4** | 21.6 | 21.4 |

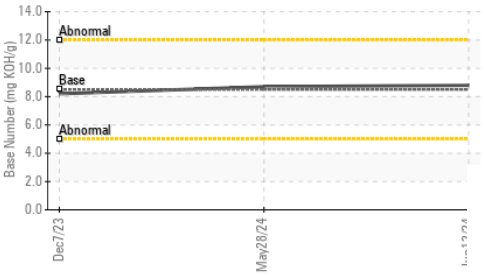
| FLUID DEGRADATION | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | **16.4** | 19.2 | 19.2 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 8.5 | **8.8** | 8.7 | 8.2 |

# OIL ANALYSIS REPORT

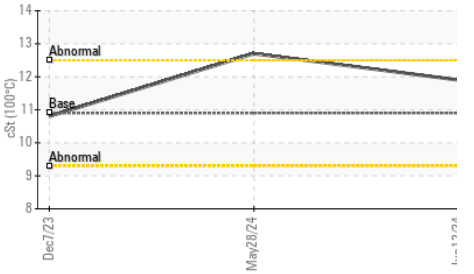
FT-IR (Direct Trend)




Base Number




Viscosity @ 100°C

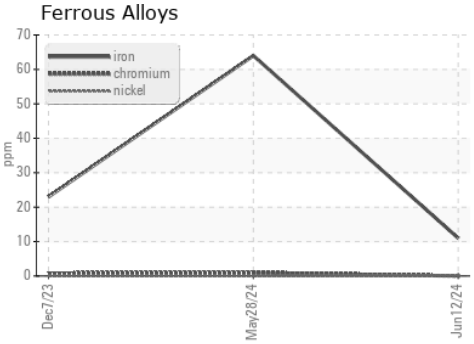



| VISUAL | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| White Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | **NONE** | NONE | NONE |
| Precipitate | scalar | *Visual | NONE | **NONE** | NONE | NONE |
|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

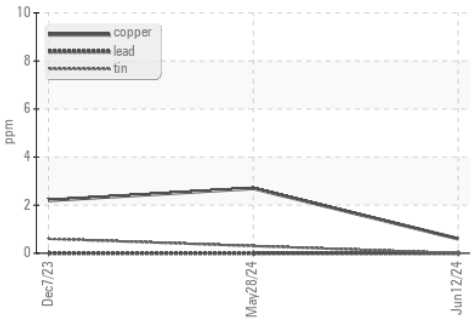
| FLUID PROPERTIES | | method | limit/base | current | history1 | history2 |
|---|---|---|---|---|---|---|
| Visc @ 100°C | cSt | ASTM D445 | 10.9 | **11.9** | 12.7 | 10.8 |

## GRAPHS

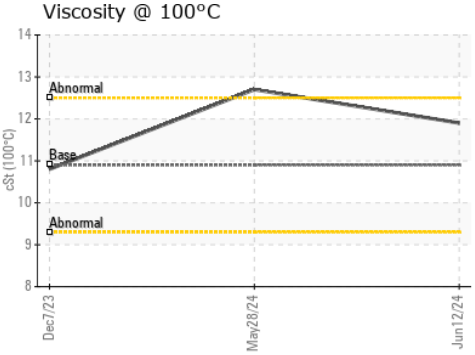
Ferrous Alloys



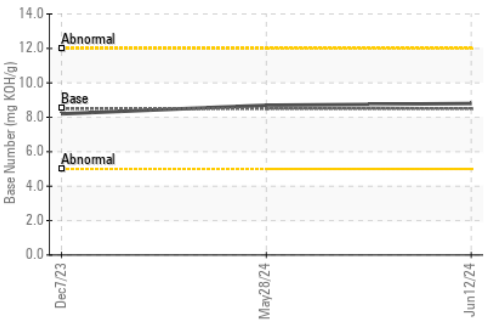

Non-ferrous Metals




Viscosity @ 100°C




Base Number




Certificate L2367

**Laboratory** : WearCheck USA - 501 Madison Ave., Cary, NC 27513
**Sample No.** : SBP0007215
**Lab Number** : 06220686
**Unique Number** : 11098883
**Test Package** : FLEET

**Received** : 26 Jun 2024
**Tested** : 27 Jun 2024
**Diagnosed** : 27 Jun 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)*


**Sapp Bros. Petroleum - Corporate - OMA**
9915 South 148th
OMAHA, NE
US 68138
Contact: Josh Broz
JBroz@sappbros.net
T: (402)895-2202
F: