



OIL ANALYSIS REPORT

| | |
|-----------------|---------------|
| WEAR | NORMAL |
| CONTAMINATION | NORMAL |
| FLUID CONDITION | NORMAL |

Machine Id
2020
 Component
Diesel Engine
 Fluid
VALVOLINE PREMIUM BLUE GEN2 SAE 10W30 (--- GAL)

RECOMMENDATION

Resample at the next service interval to monitor. Please specify the component make and model with your next sample.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | WC0837733 | WC0837760 | WC0694164 |
| Sample Date | | Client Info | | 30 Apr 2024 | 29 Feb 2024 | 20 Nov 2023 |
| Machine Age | mls | Client Info | | 638421 | 597000 | 526038 |
| Oil Age | mls | Client Info | | 25000 | 20000 | 20000 |
| Filter Age | mls | Client Info | | 25000 | 20000 | 20000 |
| Oil Changed | | Client Info | | Changed | Changed | Changed |
| Filter Changed | | Client Info | | Changed | Changed | Changed |
| Sample Status | | | | NORMAL | ABNORMAL | NORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >100 | 24 | 28 | 6 |
| Chromium | ppm | ASTM D5185m | >20 | 2 | 3 | <1 |
| Nickel | ppm | ASTM D5185m | >4 | <1 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | | <1 | <1 | 0 |
| Silver | ppm | ASTM D5185m | >3 | <1 | 0 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | 4 | 5 | 4 |
| Lead | ppm | ASTM D5185m | >40 | 2 | 3 | <1 |
| Copper | ppm | ASTM D5185m | >330 | 2 | 4 | 0 |
| Tin | ppm | ASTM D5185m | >15 | 1 | 2 | <1 |
| Vanadium | ppm | ASTM D5185m | | 0 | <1 | 0 |
| White Metal | scalar | *Visual | NONE | NONE | NONE | NONE |
| Yellow Metal | scalar | *Visual | NONE | NONE | NONE | NONE |

CONTAMINATION

There is no indication of any contamination in the oil.

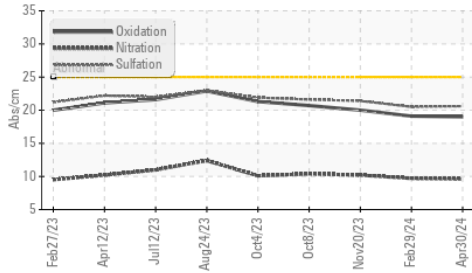
| | | | | | | |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon | ppm | ASTM D5185m | >25 | 13 | ▲ 35 | 5 |
| Potassium | ppm | ASTM D5185m | >20 | 3 | 2 | <1 |
| Fuel | | WC Method | >5 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | >3 | 0.3 | 0.2 | 0.3 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 9.6 | 9.7 | 10.2 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 20.6 | 20.5 | 21.4 |
| 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 |

FLUID CONDITION

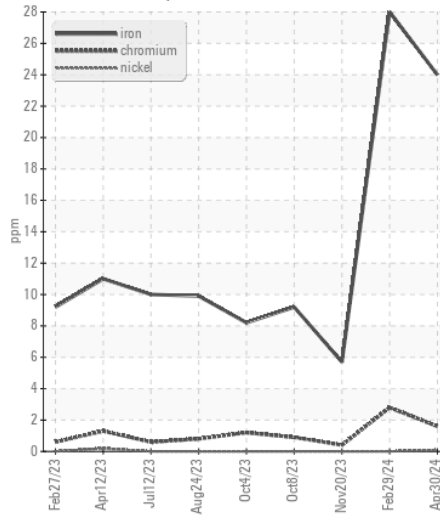
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| | | | | | | |
|------------------|----------|-------------|------|--------------|------|------|
| Sodium | ppm | ASTM D5185m | | 4 | 7 | 2 |
| Boron | ppm | ASTM D5185m | | 36 | 35 | 32 |
| Barium | ppm | ASTM D5185m | | 0 | 8 | 0 |
| Molybdenum | ppm | ASTM D5185m | | 49 | 66 | 47 |
| Manganese | ppm | ASTM D5185m | | <1 | 4 | <1 |
| Magnesium | ppm | ASTM D5185m | | 775 | 874 | 835 |
| Calcium | ppm | ASTM D5185m | | 1214 | 1437 | 1171 |
| Phosphorus | ppm | ASTM D5185m | 800 | 785 | 860 | 683 |
| Zinc | ppm | ASTM D5185m | 890 | 902 | 1155 | 898 |
| Sulfur | ppm | ASTM D5185m | | 2777 | 3096 | 2222 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 19.0 | 19.1 | 20.0 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 11 | 8.6 | 8.4 | 8.6 |
| Visc @ 100°C | cSt | ASTM D445 | 12.0 | 11.3 | 11.1 | 11.6 |

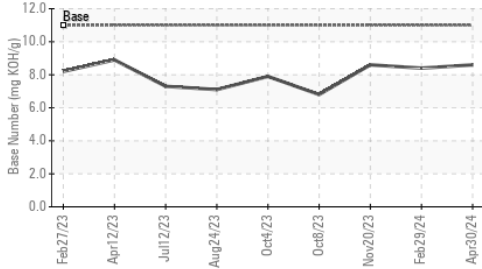
FT-IR (Direct Trend)



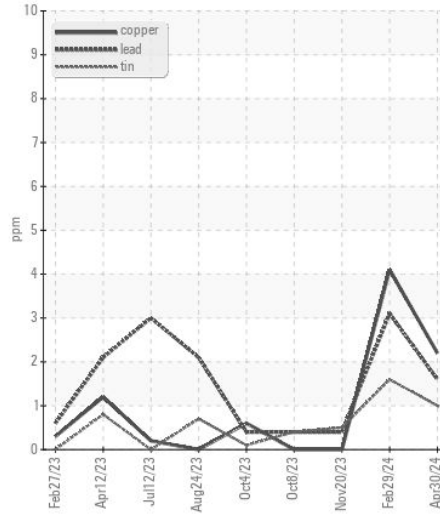
Ferrous Alloys



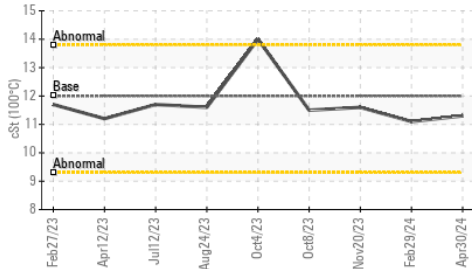
Base Number



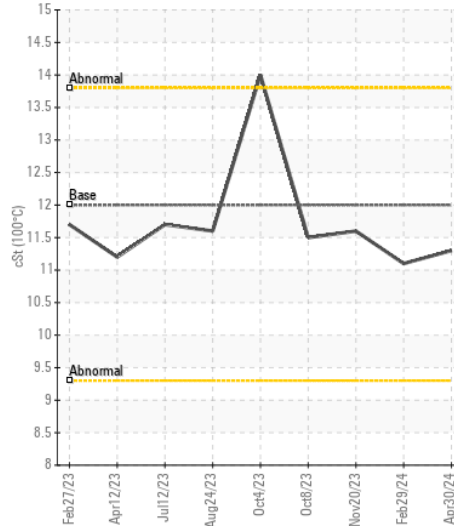
Non-ferrous Metals



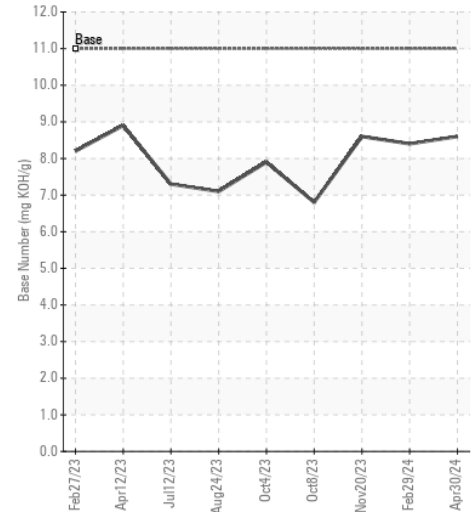
Viscosity @ 100°C



Viscosity @ 100°C



Base Number



Certificate L2367

Laboratory : WearCheck USA - 501 Madison Ave., Cary, NC 27513

Sample No. : WC0837733

Lab Number : 06231985

Unique Number : 11115478

Test Package : FLEET

Received : 10 Jul 2024

Tested : 10 Jul 2024

Diagnosed : 10 Jul 2024 - Wes Davis

LIBERTY LINEHAUL WEST INC

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US 90640

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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)