



OIL ANALYSIS REPORT

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

Area

[Z20818]

Machine Id

KENWORTH TLL 24

Component

Front Diesel Engine

Fluid

VALVOLINE 15W40 (43 LTR)

RECOMMENDATION

Resample at the next service interval to monitor.

| Test | UOM | Method | Limit/Abn | Current | History1 | History2 |
|----------------|-----|-------------|-----------|--------------------|-------------|-------------|
| Sample Number | | Client Info | | WC06189889 | WC05410933 | WC05016150 |
| Sample Date | | Client Info | | 08 May 2024 | 23 Nov 2021 | 05 Jun 2020 |
| Machine Age | kms | Client Info | | 360639 | 483014 | 361514 |
| Oil Age | kms | Client Info | | 60000 | 121500 | 56465 |
| Filter Age | kms | Client Info | | 60000 | 121500 | 56465 |
| Oil Changed | | Client Info | | Changed | Changed | Changed |
| Filter Changed | | Client Info | | N/A | Changed | Changed |
| Sample Status | | | | NORMAL | ABNORMAL | NORMAL |

WEAR

All component wear rates are normal.

| | | | | | | |
|--------------|--------|-------------|------|--------------|------|------|
| Iron | ppm | ASTM D5185m | >90 | 32 | 24 | 22 |
| Chromium | ppm | ASTM D5185m | >20 | 2 | 1 | 1 |
| Nickel | ppm | ASTM D5185m | >2 | <1 | 0 | 0 |
| Titanium | ppm | ASTM D5185m | >2 | <1 | 1 | <1 |
| Silver | ppm | ASTM D5185m | >2 | 1 | <1 | 0 |
| Aluminum | ppm | ASTM D5185m | >20 | 8 | 3 | 3 |
| Lead | ppm | ASTM D5185m | >40 | 4 | 2 | 4 |
| Copper | ppm | ASTM D5185m | >330 | 2 | 2 | 1 |
| Tin | ppm | ASTM D5185m | >15 | 2 | <1 | 0 |
| Vanadium | ppm | ASTM D5185m | | <1 | 0 | 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.

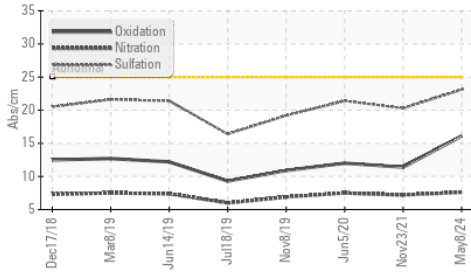
| | | | | | | |
|------------------|----------|-------------|-------|----------------|-------|-------|
| Silicon | ppm | ASTM D5185m | >25 | 13 | ▲ 30 | 5 |
| Potassium | ppm | ASTM D5185m | >20 | 15 | 2 | 1 |
| Fuel | | WC Method | >3.0 | <1.0 | <1.0 | <1.0 |
| Water | | WC Method | >0.2 | NEG | NEG | NEG |
| Glycol | | WC Method | | NEG | NEG | NEG |
| Soot % | % | *ASTM D7844 | >6 | 0.5 | 0.5 | 0.6 |
| Nitration | Abs/cm | *ASTM D7624 | >20 | 7.6 | 7.2 | 7.5 |
| Sulfation | Abs/.1mm | *ASTM D7415 | >30 | 23.1 | 20.3 | 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

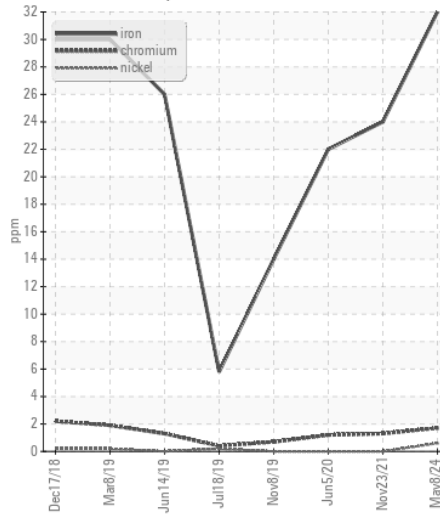
The BN result indicates that there is suitable alkalinity remaining in the oil. The condition of the oil is suitable for further service.

| | | | | | | |
|------------------|----------|-------------|------|--------------|------|------|
| Sodium | ppm | ASTM D5185m | | <1 | 0 | 2 |
| Boron | ppm | ASTM D5185m | 39 | 300 | 5 | <1 |
| Barium | ppm | ASTM D5185m | 1 | 0 | 0 | <1 |
| Molybdenum | ppm | ASTM D5185m | 49 | 99 | 6 | 0 |
| Manganese | ppm | ASTM D5185m | 1 | <1 | <1 | <1 |
| Magnesium | ppm | ASTM D5185m | 616 | 422 | 87 | 14 |
| Calcium | ppm | ASTM D5185m | 1554 | 1551 | 2561 | 2654 |
| Phosphorus | ppm | ASTM D5185m | 899 | 1108 | 1006 | 924 |
| Zinc | ppm | ASTM D5185m | 1069 | 1355 | 1059 | 1104 |
| Sulfur | ppm | ASTM D5185m | 2624 | 3616 | 3035 | 3037 |
| Oxidation | Abs/.1mm | *ASTM D7414 | >25 | 16.1 | 11.4 | 12 |
| Base Number (BN) | mg KOH/g | ASTM D2896 | 6.9 | 5.7 | 7.32 | 6.3 |
| Visc @ 100°C | cSt | ASTM D445 | 13.6 | 13.0 | 13.4 | 14.1 |

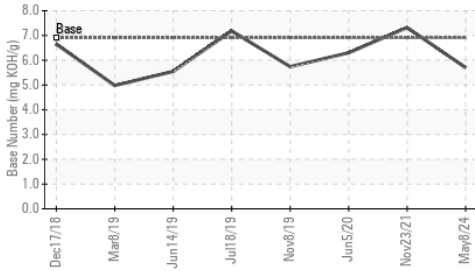
FT-IR (Direct Trend)



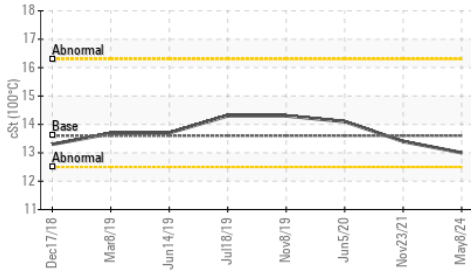
Ferrous Alloys



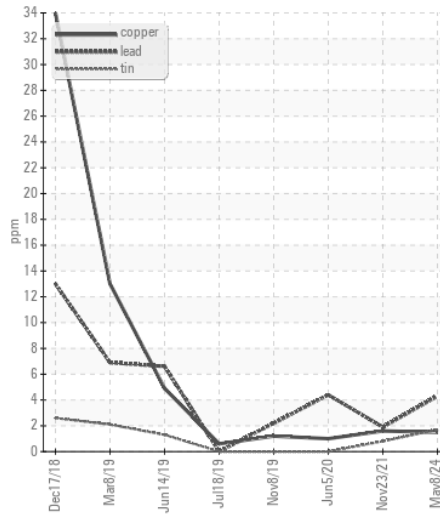
Base Number



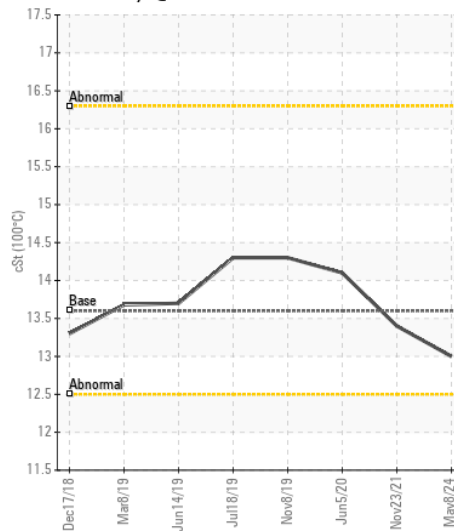
Viscosity @ 100°C



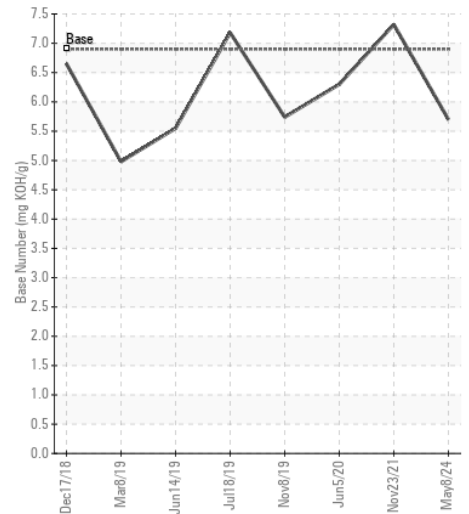
Non-ferrous Metals



Viscosity @ 100°C



Base Number



Certificate L2367

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

Sample No. : WC06189889

Lab Number : 06189889

Unique Number : 11046641

Test Package : FLEET

Received : 23 May 2024

Tested : 25 May 2024

Diagnosed : 25 May 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)

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